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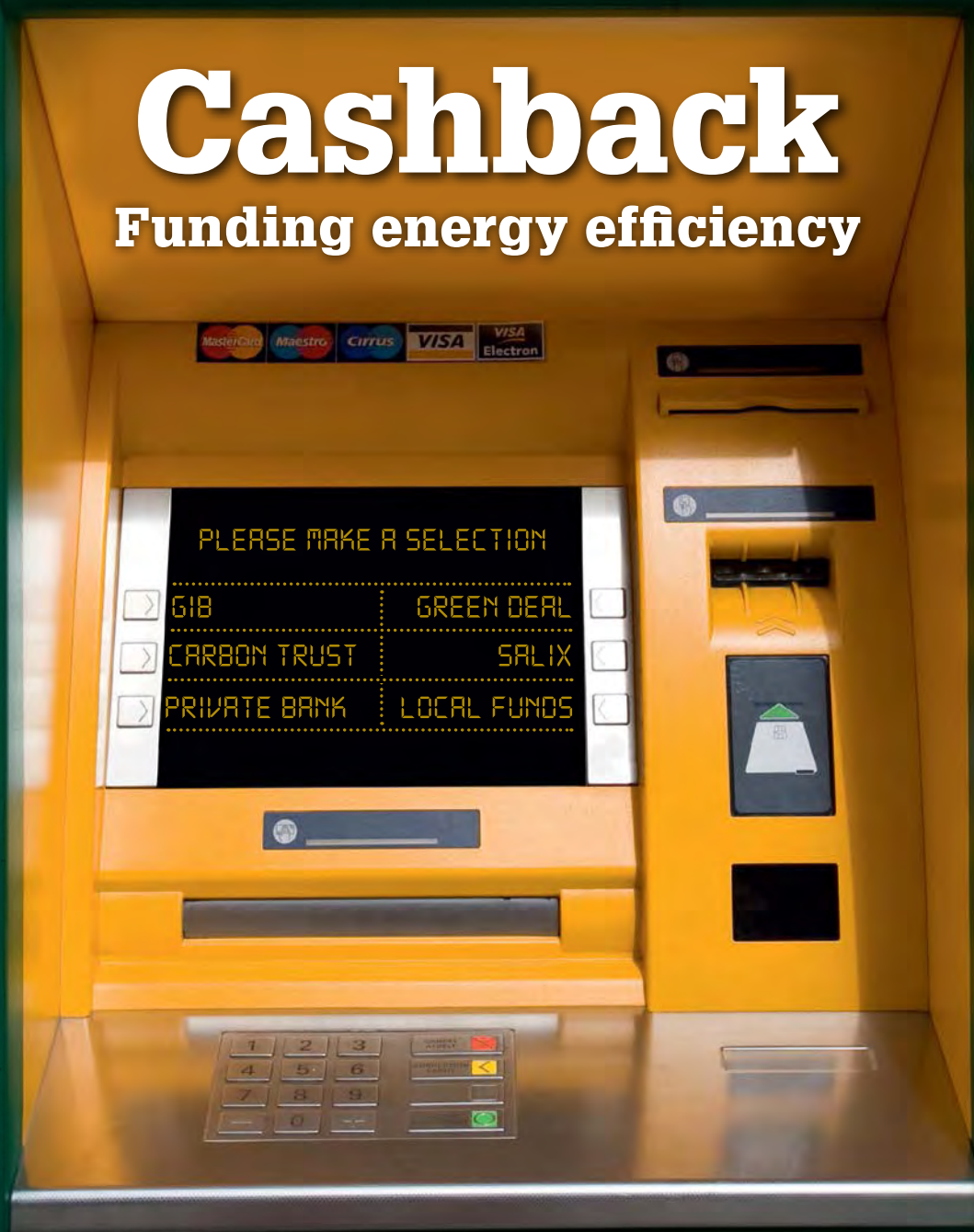
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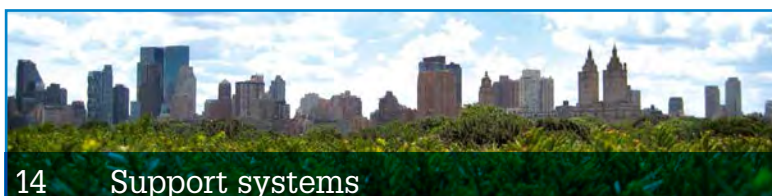
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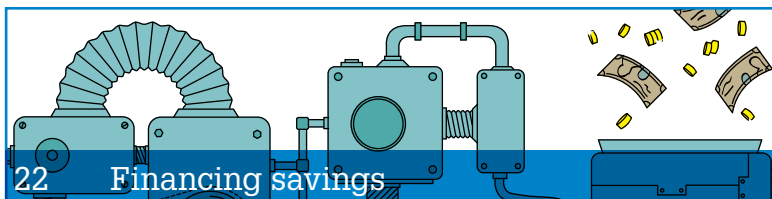
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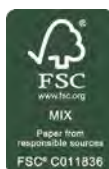
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# Making the difference

Unease over “fracking” company Cuadrilla’s plans to drill for fossil fuels in Lancashire and West Sussex raise the question of what role environment professionals should play in the shale gas industry. The same applies to the construction of HS2, the high-speed rail link between London and the north. Both projects are beset by environmental concerns.

There are fears that shale gas operations could pollute local watercourses and impair local air quality, while extracting and burning more fossil fuels will exacerbate further climate change. Constructing phase I of HS2, from London to Birmingham, will impact on 10 sites of special scientific interest (SSSI), more than 50 ancient woodlands as well as numerous local wildlife sites along the 140-mile route. More will be affected by phase II.

The government is keen on exploiting UK shale gas and building HS2, believing both can aid economic recovery. If shale gas can be extracted in viable quantities from the 1,300 trillion cubic feet the British Geological Survey estimates lies in bedrock across the UK, it will mean that the number of fracking sites – like the one at Lower Stumble in Balcombe, which was recently the focus of protests, and several near Blackpool – is likely to multiply significantly across the country. It will create an industry supporting thousands of jobs. Completion of HS2 is not scheduled until 2033, so major construction works will be located along the route for the best part of 20 years, with phase I expected to support about 40,000 jobs. Environment practitioners – including experts in environmental impact assessment, ecologists, environment engineers, scientists and environment management specialists – will fill some of these roles and provide assurance that local impacts are being properly managed.

Some environmentalists, particularly campaigners, will be uneasy about environment professionals being involved in shale gas or a development project that could potentially damage a number of SSSIs believing they lend a cloak of respectability to potentially damaging operations. But these are exactly the industries and projects where environment professionals should be playing a key role – the ones that have the greatest potential to do harm.

The oil and gas industry is already a major employer of environment professionals, from the North Sea to the Middle East, and they should not shy away from working for companies drilling for fossil fuels in the bedrock under the South Downs or Bowland basin in Lancashire just because of the concerns about fracking. Likewise, major construction projects often employ a number of environment practitioners. Evidence from London 2012 shows they play a vital role in ensuring projects address environmental impacts effectively.

Having experts in place is not a guarantee that there will be no repeat of the Deepwater Horizon disaster or any of the other examples of operational failings wreaking environmental damage, just as an environment management system cannot provide complete assurance that a site is complying with its legal obligations. But their presence will generally raise performance levels.

The key is to involve practitioners at an early stage. Embedding environment and sustainability professionals across projects from the start was one of the main learnings that emerged London 2012. That way important relationships can be forged, key sustainability performance indicators set and systems established to monitor performance. It can also ensure environment practitioners influence strategy at the beginning and sustainability is not something bolted on at later stage when decisions have already been made.

Environment practitioners cannot guarantee that no environmental problems will occur, but their presence in an organisation can help raise levels of performance



Paul Suff, editor

## Short cuts

## REACH training

UK manufacturers can now access support for activities and operations subject to the EU REACH Regulation following the launch of a dedicated training and consultancy service by EEF. The manufacturers' body says the aim of the new service is to help companies manage the risks to their businesses from the Regulation, which came into force in 2007. It requires users to provide information on how they use chemical substances to their suppliers, and to implement measures to ensure the safe use of substances. "Many manufacturers do not fully appreciate the business risk presented by REACH. Many declare compliance to customers but do not have robust processes in place to provide adequate assurance," said Greg Roberts, environment consultant at EEF. Meanwhile, US law firm Morrison & Foerster has launched an online resource ([mofo.com/green-chemistry](http://mofo.com/green-chemistry)) to help businesses comply with California's Green Chemistry Initiative. The new environmental law requires manufacturers, retailers and suppliers to identify and restrict toxic chemicals used in consumer goods sold in the state.

## Scottish compliance

New figures from Sepa on its compliance assessment scheme (CAS) reveal a further improvement in licence compliance levels. The percentage of operators achieving a rating of excellent, good or broadly compliant rose to 89% in 2012 – up from 87% the previous year. Of the 3,839 licensed activities assessed in 2012, 2,855 (74%) were rated excellent, 526 (14%) good and 40 (1%) as broadly compliant. The remaining operators were classed as at risk (151 or 4%), poor (220 or 6%) or very poor (47 or 1%). CAS details how well permitted operators in Scotland have met their licence conditions. Last year was the first time sites licensed under the Radioactive Substances Act were included in the CAS figures, resulting in Sepa carrying out a larger number of assessments than in 2011.

## Defra failing resources test

The waste sector has criticised a consultation document from Defra setting out its proposals for a waste prevention plan (WPP) for England. It is warning that the environment department has failed to shift away from narrow waste-focused thinking to a broader vision that encompasses resource efficiency and circular economics.

"It was clear early in the process that a broader, more ambitious and holistic approach to waste prevention as a necessary part of a resource efficient, circular economy was not shared by ministers," said Ray Georgeson, chief executive at the Resource Association. His counterpart at the Furniture Re-use Network, Greg Anderson, commented: "The content of this consultation gives the reuse sector little hope for a more holistic approach to resource management and product stewardship."

Steve Lee, chief executive at the Chartered Institution of Wastes Management, was critical of what he described as a "complete absence of any concrete and measurable objectives and actions". He said the consultation proposals contained far too little on data and the range of metrics needed to measure genuine prevention, and no



Defra plan will not deliver circular economy, says the waste industry

innovative thinking on policy mechanisms to drive behaviour change.

However, Lord de Mauley, resource management minister at Defra, said: "What we have set out in this programme will help businesses to save money, help people cut back on waste and pass on items that they would otherwise throw away." He said that businesses could make savings of £17 billion a year by taking simple steps to produce less waste.

The WPP for England – the devolved administrations are developing their own plans – is required under the revised Waste Framework Directive (2008/98/EC). However, Georgeson and Lee agree that Defra's proposals take a "bare minimum" approach to compliance, and both warned that the government may struggle to convince the European Commission that its plan is satisfactory.

## Do-it-yourself waste success

A voluntary agreement between Wrap and home improvement companies has reduced the amount of waste the sector sends to landfill by more than 80% and cut packaging use by one-quarter compared with 2007.

Wrap data reveal that signatories to the home improvement sector commitment, which ran from 2009 to 2012 and included B&Q, Homebase and Wickes, delivered far more than the original targets. The reduction in waste to landfill was against a target of 50%, while the original packaging-reduction target was just 15%. The final figures from Wrap show that, by the end of 2012, the amount of waste the sector sent to landfill had fallen from 108,908 tonnes in 2007 to just 14,610 tonnes. When adjusted for sales, this represents a 83% reduction.

At the same time, the amount of own-brand and direct-sourced product packaging used by the sector declined by

25% when adjusted for sales, from 113,627 tonnes to 74,632 tonnes.

"Overall, the activities of all signatories have improved product and packaging design to make recycling easier," said Liz Goodwin, chief executive at Wrap.

Among the initiatives adopted by the signatories to cut waste is the reusable packaging system introduced by B&Q for the home delivery of kitchen worktops and components. The DIY retailer says the scheme delivered annual cost savings amounting to £1 million and eliminated 1,200 tonnes of packaging a year.

Another example is the new transit and retail packaging for DIY painting products, such as brushes, rollers and trays, put in place by the Home Retail Group, which includes Argos and Homebase. The firm also established a packaging take-back scheme for home deliveries of bulky kitchen appliances, and also began accepting old appliances for recycling.

# Government is set to scrap code for sustainable homes

The code setting sustainability criteria for new build homes is to be scrapped in a bid to cut “red tape”, the communities department has confirmed.

A consultation on proposals to reduce the number of building standards from around 100 to 10, confirms that the government believes the voluntary code for sustainable homes has served its purpose and that most of its requirements should now be incorporated into minimum standards set by the Building Regulations.

The consultation says there is no longer a need for the separate carbon and energy performance targets outlined in the code.

“Targets should be set in the Building Regulations as we move towards zero carbon homes,” it states. The government also argues that, with minimum water-efficiency targets incorporated into the 2010 Buildings Regulations and local planning authorities able to specify tougher water-use targets for new homes, the code is now obsolete.

Paul King, chief executive of the UK Green Building Council, acknowledges that streamlining building standards is sensible, but warned: “With the demise of the code and big omissions around



Separate energy and CO<sub>2</sub> targets are no longer necessary, says government

materials and ecology, we risk losing a momentum that has transformed the way homes have been built over the past seven years. The government claims its plans will take off the bureaucratic handbrake that holds back house building, but it is in danger of letting key sustainability considerations roll away completely.”

The communities department has also launched a consultation outlining its proposals to allow developers to offset emissions from new build homes to meet the requirements of the zero carbon homes standard, which comes into force in 2016.

## Energy and resource costs are top supply chain risks

Volatility in the price of raw materials is seen by multinationals as the greatest risk to their global supply chains, according to the latest research from PwC and MIT's Forum for Supply Chain Innovation.

Of the 209 firms surveyed, 53% agreed that changes to resource cost was one of the greatest threats to their supply chain, outstripping the perceived risks of currency fluctuations (47%) or changes to business markets (41%). Meanwhile, energy/fuel prices was ranked fourth in the list of risks, followed closely by environmental catastrophes and resource scarcity.

When asked about the impact of supply chain disruptions over the past 12 months, more than 60% confirmed that their company's performance indicators had dropped by 3% or more as a direct result. To cut the risk posed to supply

chains, firms must invest in more flexible processes and work more collaboratively with upstream and downstream suppliers, concludes the report. “Companies consider alignment between partners in the supply chain as the most important factor in enabling risk reduction,” it states.

Meanwhile, EEF has confirmed that UK manufacturers are increasingly working with their suppliers to improve processes and develop products and services. Its latest innovation survey, found that 66% of firms are collaborating on innovation with their suppliers – up from 48% in 2010. The results also reveal that environmental standards and regulations are increasingly driving innovation among manufacturers. In 2010, just over 40% of respondents said that environment rules were a key driver for innovation. The 2013 figure is 45%.

### Short cuts

#### Biomass sustainability

Energy minister Greg Barker has unveiled the government's plans to ensure power stations that burn biomass and biogas use sustainably sourced feedstocks and produce significantly fewer greenhouse-gas emissions than fossil-fuelled plants. The plans, which closely follow those outlined in a consultation last year, link subsidies under the Renewables Obligation (RO) to sustainability criteria from April 2015. Companies that operate biomass plants with a generating capacity of at least 1MW will not be able to claim RO support unless they can produce an independent report verifying that the fuel used meets land-use criteria based on the government's existing timber procurement rules. These require wood to be sourced from forests that are managed in a way that ensures there is minimal harm to ecosystems and protects soil, water and biodiversity, for example.

#### The balance of power

Legislating to deal with the costs of environment damage and pollution is best dealt with at the European level, confirms IEMA in its response to the government's consultation on the balance of power between UK and EU policymakers (see p.36). The Institute concludes that the European single market means it is “essential” for the environment to be integrated into economic decision making at the EU-level. This will ensure a level playing field for businesses, says IEMA. However, it warns that the different ways in which member states implement EU rules can increase costs for businesses and create inconsistencies that make compliance difficult for those operating across national borders. The different approaches of authorities in England and Scotland in applying the Water Framework Directive is cited as a key example. IEMA also argues that the UK government must be fully involved in policymaking at EU level, as well as in the development of management systems standards and those detailing environmental performance requirements for products.



## Short cuts

## Losing its appeal

Garden centre operator Dobbies has failed in its appeal to overturn a £75,000 fine for pumping poorly treated sewage into a stream in Cumbria. The company, a subsidiary of Tesco, was fined in March by Carlisle magistrates' court after its retail outlet in the town failed to comply with the requirements of its environmental permit. In April 2011, Environment Agency officers traced the source of pollution in a watercourse in Sowerby Wood to a pipe that was pumping secondary-treated sewage into the water from the nearby Dobbies garden centre. The permit for the store states that the outlet must be checked weekly, but the court heard that staff were not aware of this condition. Judge Peter Hughes, sitting with two magistrates at Carlisle crown court, referred to this lack of awareness when rejecting the appeal. There had been no copy of the environmental permit at the store, no weekly checks on discharges and no sense of urgency, he found. "Because of those aggravating features the overall penalty had to be substantial to mark what was a serious breach of environmental regulations," he said. "The fines imposed totalled £75,000. The view of all of us is that arguably that was on the lenient side."

## Cradle-to-cradle pilot

The London sustainable industries park in Dagenham, east London, is to host the first demonstration of "cradle-to-cradle" principles. These focus on increasing value and benefit to the environment as well as the economy and society, and draw on the concept that "everything is a resource for something else". Partners in the project, such as the Institute for Sustainability and the University of East London, will help businesses at the site – which include a food-grade plastic recycling business, a gasification plant and an anaerobic digestion plant – to understand how synergies between their production processes can create additional value from waste or by-products that would otherwise be downcycled, landfilled or discharged into the environment.

## Kicking out carbon emissions

With the start of the 2013–14 season, the Carbon Trust has advised football fans following their team from a distance and who want to minimise their carbon footprint to watch matches on a smartphone or tablet connected to broadband internet rather than a television. According to the trust, emissions can be as much as eight times lower watching a match on a broadband-connected personal device than on a television. This is mainly due to the smaller size of the screen.

The trust cautions against streaming a game on a smartphone or tablet rather than connecting the device to the internet, however, because this can be one the most carbon-intensive ways to watch a match.

Research by the trust shows that watching a match on an LED television with a group of supporters is the lowest carbon way per viewer to follow a game, while watching a match live at the stadium is the most carbon-intensive way – particularly for an away game, due to the impact of transport.

To illustrate the carbon impact of a stadium full of fans, the trust and the



Football Association calculated the footprint of the season's traditional curtain raiser, the Community Shield game at Wembley. The research reveals that the match in August between Manchester United and Wigan Athletic emitted 5,160 tonnes of carbon dioxide, with almost 97% of the total coming from fan travel. This, says the trust, is equivalent to the total annual emissions from energy use for around 1,000 average UK households.

## Utility firms must reduce water use to cut carbon

Water companies should be given targets to reduce water demand from commercial users by 3% each year and from households by one litre per person a day to ensure the sector is cutting carbon emissions in line with national targets, says the Chartered Institution of Water and Environmental Management (CIWEM).

In its latest report, CIWEM concludes that utility companies can reduce their carbon footprints by 10% in each five-year investment cycle until 2050, but only with more support from the government and the sector's regulator Ofwat.

Meeting increasingly tougher EU water quality targets requires more complex and energy-intensive treatment, says CIWEM. As a result, carbon saving opportunities will have to focus on optimising the efficiency of treatment facilities and distribution networks, installing renewable energy technologies, such as anaerobic digestion, and by reducing demand for potable water.

Water use targets must be accompanied by financial incentives to cut carbon, says the report. It recommends that Ofwat relaxes its requirement that water firms demonstrate their investments will be cost effective in five years. Energy and carbon efficiency measures, particularly new technologies, require longer payback times, argues CIWEM.

"The industry is awake to the issue of reducing carbon emissions, with the most ambitious water companies aspiring to carbon neutrality by 2050," says CIWEM policy manager Alastair Chisholm. "But to achieve this aspiration, incentives are likely to be needed to help drive companies past the easy wins."

Meanwhile, EU regulators have confirmed that compliance with urban wastewater collection and treatment rules has continued to improve across the bloc. In 2009–10, 91% of wastewater from Europe's biggest cities received more stringent treatment – up from 77% in 2007–08.



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# Green spaces provide economic boost

Investing in parks, green roofs and river restoration can bring tangible economic benefits locally, according to a new study commissioned by Defra.

Researchers from Sheffield Hallam University and the Economics for the Environment Consultancy examined a series of green infrastructure projects from around the world and found that establishing more green spaces had financial benefits in addition to increased delivery of ecosystems services. Such benefits include job creation, boosting property prices and attracting new businesses and visitors to an area.

"The evidence shows that increasing the attractiveness of an area through investment in high-quality parks increases inward investment and property values in the proximity [and] impacts on the number of visitors attracted to, and spending in, the local area," states the report.

The research cites the Glasgow green renewal programme as an example of such success. It has seen a 28% increase in the number of people working in the area and a 47% rise in council tax revenue following a £15.5 million park improvement project.

Meanwhile, the restoration of the Cheonggyecheon stream in Seoul, Korea, coupled with the creation of "manmade" wetlands and forests, has helped to boost tourist spend by £1.3 million. The initiative has also helped to reduce

local temperatures by 3°C–6°C compared with other parts of the city, and cut levels of particulate air pollution by 35%.

The economic benefits of such initiatives are harder to demonstrate at the national level, however, with the report warning that visitors and financial investment brought into one area could potentially divert resources from other parts of the country.

Although the clearest national benefits from green infrastructure are those related to environmental cost savings and healthier populations, the study says these are also



London's largest green wall at the Rubens at the Palace hotel

the most easily overlooked by policymakers because they are difficult to quantify and typically occur over a long time.

The report came as the largest green wall in London was completed at the Rubens at the Palace hotel in Victoria. The 21-metre high wall contains more than 10,000 plants and 16 tonnes of soil and was designed to reduce flooding in the area. Up to 10,000 litres of rainwater can be harvested by the wall and stored in tanks at the hotel. It will also improve air quality, deaden noise and help to regulate the hotel's temperature throughout the year.

## EIA Update

iema

### Replacing circular 02/99

The communities department has unveiled a new online library of guidance ([lexisurl.com/iema16324](http://lexisurl.com/iema16324)) on the planning regime in England and Wales. It includes a replacement for the department's 58-page guide on environmental impact assessment (EIA) – circular 02/99. The eight webpages on EIA cover, for example, the purpose of EIA, the stages of an assessment and who is responsible for preparing the environmental statement. The move is aimed at streamlining the planning process, with more than 7,000 pages of guidance reduced to about 500 online pages. The launch is only in "beta" at this stage, meaning the online guidance is being tested to ensure it works and provides accurate advice. Testing continues until 9 October and IEMA is interested in hearing the thoughts of members, either via its LinkedIn group or by email ([j.fothergill@iema.net](mailto:j.fothergill@iema.net)). Existing guidance will not be cancelled until the new online guidance is finalised.

### EIA and SEA in Scotland

On 30 August the Scottish government updated its EIA guidance (PAN58) and its toolkit on strategic environmental assessment (SEA). The EIA guide has been developed to create more proportionate project-based assessments in Scotland and is aimed mainly at local authorities and statutory consultees. The revised SEA toolkit is a more holistic review of how the assessments can be delivered effectively. The revised guidance moves away from the previous one-size-fits-all approach to provide a more flexible support mechanism. It will enable experienced practitioners to apply new techniques where they are likely to prove more effective than the previous focus on objective-led assessment.

### Proportionate EIA is achievable

IEMA hosted its third EIA Quality Mark forum on 11 September and more than 75 delegates attended the event at CH2M Hill's offices in London.

The focus of the forum was on how to deliver proportionate EIA for the UK. The keynote address on EIA's role in nationally significant infrastructure projects (NSIP) was delivered by Sir Michael Pitt, chief executive at the Planning Inspectorate (see pp.30–32 for more on EIA and NSIP). Discussions ranged from the role of consenting authorities and statutory consultees to how environmental statements can be made more accessible.

### EIA webinars

The EIA webinar on 26 September will provide advice on how to take account of climate change in EIA. Subsequent EIA webinars to the end of the year are:

- Effectively linking EIA and Habitats Directive assessments.
- Evaluating the significance of greenhouse-gas emissions in EIA.
- Considering water in EIA.

The lunchtime sessions (12:30–13:30) will be held on: 31 October, 28 November and 19 December.



# Energy efficiency policies not helping firms

Government initiatives aimed at encouraging organisations to cut energy use are failing because they are bureaucratic, complicated and expensive, according to the CBI.

The UK business body is urging the government to review its approach to energy efficiency, arguing that companies are missing out on the economic and business benefits of saving energy due to a lack of awareness, difficulties in accessing finance and incoherent policies.

A CBI survey of 100 of its members found that, although 80% agree energy efficiency is a high priority, just 5% believe government policies, such as the carbon reduction commitment (CRC), the green deal and climate change agreements, are encouraging companies to curb their energy consumption.

"Businesses are frustrated with the tangle of overlapping policies that are bureaucratic, complex and costly," commented Rhian Kelly, the CBI's director for business environment policy. "The government should assess all energy-

efficiency policies that affect business and come up with a simpler approach, where any new initiatives truly add value."

Decc's energy efficiency deployment office, which was launched in 2012, must do more to ensure the CRC, the climate change levy and other policies are "joined up", particularly on reporting requirements, concludes the CBI. "Some firms have to report their energy use and emissions in different ways under different schemes," said Kelly.

The CBI also urges the government to do more to help firms finance energy-efficiency measures (see p.22). The report highlights in particular the need for action to develop the non-domestic green deal – which has stalled due to a lack of funds – and for clearer policies on combined heat and power (CHP) to help energy-intensive firms make the longer-term business case for investing in CHP.

A separate report for Decc on decarbonising heat in industrial processes finds that CHP could play a key role in reducing CO<sub>2</sub> emissions in the short term.



The report, which examined evidence of potential carbon savings in several industrial sectors, found that the most significant opportunities for decarbonisation through CHP were in the food and drink industry. Carbon capture and storage technologies, meanwhile, will be important for reducing CO<sub>2</sub> from cement plants and refineries, while switching from fossil fuels to biogas and syngas provide the best opportunities for firms in the ceramics- and glass-making industries.

From [environmentalisonline.com](http://environmentalisonline.com)...

## New BS 8900

The UK's sustainable development standard, BS 8900, has been revised and is now a certification standard. Launched in 2006, 8900 was the first management standard to help organisations to incorporate sustainable development principles into their operations. The new edition has been split into two parts. The first, 8900-1, contains guidance on the "minimum principles" of sustainable development – inclusivity, integrity, stewardship and transparency – and how these concepts can be embedded in an organisation. The second, 8900-2, is a framework to assess a firm's approach to sustainable development. Unlike other certification standards, such as ISO 14001, 8900-2 does not set out detailed requirements for a management system, focusing instead on outcomes, such as requiring users to demonstrate that they are identifying and managing their sustainable development issues.

[environmentalisonline.com/BS8900](http://environmentalisonline.com/BS8900)

## Resource use

The Earth's natural resources will be consumed twice as fast as they can be replenished by 2050, according to environmental think tank the Global Footprint Network. The warning came as Earth Overshoot Day arrived two days earlier than in 2012. Each year the network calculates when human consumption of the world's ecological resources, including ecosystems services such as carbon sequestration, surpasses the amount the Earth can produce in one year. As resource consumption continues to grow that tipping point was reached on 20 August 2013. In 2012, it fell on 18 August, while in 2003 it was 22 September and in 1993 it was 21 October. According to the Global Footprint Network, the world's population is already using 1.5 times the resources that can be generated by the Earth in a year, and that humanity is "on track to require the resources of two planets well before 2050".

[environmentalisonline.com/Overshoot](http://environmentalisonline.com/Overshoot)

## Air pollution

"Unusually high" temperatures in July may have contributed to high levels of ozone pollution across Europe, finds the European Environment Agency (EEA). Safe thresholds of ozone pollution were breached at 25% of air quality monitoring stations across the continent, according to preliminary data collated by the agency. Under EU legislation, member states have to inform the EEA if levels of ozone (O<sub>3</sub>) rise above 180 micrograms per cubic metre of air – the level at which there is a risk to the health of some sections of the population. In July, breaches were reported in Belgium, the Netherlands, northern Italy, Spain, southern France and western Germany. At the same time, average temperatures in Copenhagen, Paris, Prague and Rome were among the highest recorded since 1996. "Ozone formation increases during warm, sunny weather," explained Paul McAleavey, at EEA's air and climate change programme.

[environmentalisonline.com/Heat&air](http://environmentalisonline.com/Heat&air)

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## Recent Prosecutions

### CaseLaw

#### Planning applications within a 'single project'

In *Burridge v Breckland District Council and Greenshoots Energy Ltd* [2013] All ER (D) 138, the Court of Appeal (CA) held that two separate planning applications for two parts of a single project should have been treated as a single application for the purposes of determining whether a screening opinion was required.

Under the Town and Country Planning Regulations, a screening opinion is required where an application exceeds the thresholds set out in the Environmental Impact Assessment (EIA) Directive. In *Burridge*, a planning application was submitted for a biomass renewable energy plant and a combined heat and power (CHP) plant – the first application. The screening opinion concluded that an EIA was not required. The application was subsequently amended to omit the CHP plant and relocate it nearby. A further planning application was lodged in respect of the relocated CHP plant – the second application. The planning authority granted planning permission for both the first and the second applications on the same day.

The CA held that the planning authority was wrong to consider each application individually when considering them together as a single application would have resulted in the relevant thresholds to trigger a screening opinion being exceeded. The court ruled that the applications were interdependent and should have been regarded as part of the same substantial development. Despite this conclusion, the CA declined to quash the planning permission on the basis that a further screening opinion would not have produced a different outcome on whether an EIA was required.

Jen Hawkins

Lexis®PSL

#### Regulator annuls permit for energy-from-waste plant

The Scottish Environment Protection Agency (Sepa) has given notice to the operators of the energy-from-waste (EfW) plant at Dargavel that it will revoke the pollution prevention and control permit governing the facility on 23 September.

The notification follows a series of permit breaches at the plant since it opened in May 2009. The notice of revocation from the regulator refers to persistent breaches of emission limit values for dioxins, furans and heavy metals. It also says the site operator, Scotgen, has failed to use the best available techniques (BATs) for preventing or reducing emissions from the installation.

The plant has been subject to two enforcement notices since the start of 2013. In January, Sepa issued a notice after monitoring data confirmed dioxin and furan emissions from one of two waste lines at the site reached 0.14ngm<sup>3</sup> on 16 October 2012, exceeding the 0.1ngm<sup>3</sup> limit. A second enforcement notice was served on 26 July after a fire, which resulted in 800 tonnes of odorous waste being left on the site. Scotgen has failed to comply with either notice.

"The facility started operations more than four years ago, and in that time has never achieved a level of compliance that would give Sepa any degree of confidence that future operation would be any different," commented Ian Conroy, Sepa's technical support manager in South West Scotland. "We have provided support and assistance to Scotgen, including affording it considerable time and opportunity to demonstrate that this facility can meet BATs. Unfortunately, it has not done so."

Scotgen continues to describe Dargavel as Europe's most advanced EfW facility, but the company's forecast of an annual energy recovery rate of around 3% falls short of the high level of efficiency demanded by the plant's permit.

The Court of Session in Edinburgh has confirmed that Scotgen has lodged a notice of intent to go into administration.

#### Sewage spill at beach costs £200,000

A fault at a wastewater pumping station led to numerous discharges of untreated effluent into the sea near Margate and has resulted in Southern Water being fined £200,000.

The company pleaded guilty to breaching its permit for the Foreness Point pumping station between January and July 2011. Canterbury crown court was told that sewage is pumped by the station to a treatment plant before being returned and the treated water discharged into the sea, normally through a 1.9km pipe. However, David Warbank, prosecuting for the Environment Agency, said that during the seven-month period 101 hours of untreated effluent were discharged through the pipe, a further 44 hours through a much shorter pipe, and, for 17 minutes, discharges went straight on to beaches via an emergency pipe.

Southern Water blamed a design fault on the housing of four pumps at the Foreness site. The company has since spent £1.7 million rectifying the fault and plans to spend a further £400,000 upgrading the pumping station.

#### £925,000 penalty for damage to SSSI

The owner of clothing retailer The Edinburgh Woollen Mill has been fined £450,000 and ordered to pay costs of £475,000 by Carlisle crown court after admitting protected woodland had been felled on his land.

Philip Day pleaded guilty to two offences of damaging the 72-acre Gelt Woods, a site of special scientific interest (SSSI) in Cumbria, during work to build an access track on his estate in November 2010. According to Natural England, which brought the prosecution, the unauthorised work resulted in trees being cut down and land being excavated, damaging protected flora.

Judge Peter Hughes said Day had been "grossly negligent" in relation to the works. Janette Ward, Natural England's regulation director, said a woodland of ecological importance had been severely damaged.

A spokesperson for Day said a full restoration programme had been completed and criticised the penalty as "nine times the amount imposed for previous similar offences". Day has confirmed he intends to appeal.



# New Regulations

In force	Subject	Details
10 May 2013 	Natural environment	The Plant Health (Amendment No.2) Order (Northern Ireland) 2013 puts in place measures aimed at preventing the spread of ash dieback. <a href="http://lexisurl.com/iema15206">lexisurl.com/iema15206</a>
19 May 2013 	Environment protection	The Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 transpose EU Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control) insofar as it applies to offshore combustion installations. <a href="http://lexisurl.com/iema15522">lexisurl.com/iema15522</a>
20 May 2013 	Emissions trading	The Carbon Reduction Commitment Energy Efficiency Scheme Order 2013 makes provisions for the implementation of the government's plans to simplify the CRC scheme. <a href="http://lexisurl.com/iema15528">lexisurl.com/iema15528</a>
23 May 2013 	Emissions trading	The Greenhouse Gas Emissions Trading Scheme (Amendment) Regulations 2013 implement European Commission decision 377/2013/EU, which provides a temporary derogation from the EU emissions trading scheme for specified aircraft operations. <a href="http://lexisurl.com/iema15525">lexisurl.com/iema15525</a>
31 May 2013 	Information	The Environmental Information (Scotland) Amendment Regulations 2013 amend the 2004 Regulations by clarifying that the six-month time frame for prosecuting an offence under regulation 19 – preventing disclosure of information – starts from the date sufficient evidence to justify proceedings comes to the prosecutor's knowledge. <a href="http://lexisurl.com/iema15521">lexisurl.com/iema15521</a>
1 Jun 2013 	Emissions trading	The Carbon Reduction Commitment Energy Efficiency Scheme (Allocation of Allowances for Payment) (Amendment) Regulations 2013 amend the 2012 Regulations. Changes include establishing a single allocation period and amending regulation 6 on repayments. <a href="http://lexisurl.com/iema15526">lexisurl.com/iema15526</a>
1 Jun 2013 	Energy	The Promotion of the Use of Energy from Renewable Sources (Amendment) Regulations 2013 amend the 2011 Regulations, correcting errors in regulation 4, which transposed article 3(2) of EU Directive 2009/28/EC on promoting the use of renewable energy. <a href="http://lexisurl.com/iema15204">lexisurl.com/iema15204</a>
4 Jun 2013 	Energy	The Ecodesign for Energy-Related Products and Energy Information (Amendment) Regulations 2013 amend the 2010 Regulations and the Energy Information Regulations 2011, as well as partially implementing several European Commission regulations. The changes relate to: fans driven by motors with an input of 125W–500kW; directional lamps; LED lamps and related equipment; tumble driers; and electrical lamps and luminaires. <a href="http://lexisurl.com/iema15664">lexisurl.com/iema15664</a>
10 Jun 2013 	Water	The Water Resources (Scotland) Act 2013 (Commencement No.1) Order 2013 brings into force Part 1 (development of water resources), Part 7 (in relation to water shortage orders) and schedule 4 of the Act (which makes minor repeals). <a href="http://lexisurl.com/iema15533">lexisurl.com/iema15533</a>
17 Jun 2013 	Chemicals	EU Directive 2013/27/EU amends Directive 98/8/EC on biocidal products, by including chlorfenapyr as an active substance in annex I. Member states have until 30 April 2014 to transpose 2013/27/EU and the provisions will apply from 1 May 2015. <a href="http://lexisurl.com/iema15660">lexisurl.com/iema15660</a>
17 Jun 2013 	Environment protection	EU Directive 2013/28/EU amends annex II to Directive 2000/53/EC on end-of-life vehicles. It extends the exemption for lead in solders in electrical glazing applications (except for soldering in laminated glazing) until 1 January 2016. Member states have three months to bring in provisions complying with 2013/28/EU. <a href="http://lexisurl.com/iema15661">lexisurl.com/iema15661</a>
17 Jun 2013 	Environment protection	The Gas and Petroleum (Consents) Charges Regulations 2013 will enable the secretary of state to make a charge when a person applies for consent or authorisation under a carbon dioxide appraisal and storage licence; a gas storage licence; or a petroleum licence. <a href="http://lexisurl.com/iema15532">lexisurl.com/iema15532</a>

To find new regulations by jurisdiction visit [environmentalstonline.com/search](http://environmentalstonline.com/search) and enter your search criteria



# Latest Consultations



23 Sep 2013

## Waste prevention



Defra is consulting on a new waste prevention programme for England. It says that if businesses adopted simple steps to produce less waste, they could save an estimated £17 billion each year. The proposed programme is designed to help organisations recognise the savings possible from cutting waste and managing resources better, and to ensure products are designed to last longer and contain fewer hazardous parts.

[lexisurl.com/iema16245](http://lexisurl.com/iema16245)

27 Sep 2013

## Climate adaptation



A draft climate change adaptation programme has been published by the Scottish government. The programme is a requirement of the Climate Change (Scotland) Act 2009 and addresses the risks to Scotland identified in the UK climate change risk assessment.

[lexisurl.com/iema16041](http://lexisurl.com/iema16041)

1 Oct 2013

## Sustainable Europe



The European Commission is consulting on the possible introduction of EU-wide measures to achieve better environmental performance

of buildings. The consultation focuses on the use of resources, such as materials, water and embedded energy, and their related environmental impacts throughout the life cycle of buildings. It covers both residential and non-residential buildings, but excludes industrial sites and infrastructure, such as roads. The commission plans to publish a communication on sustainable buildings in 2014. The commission is also consulting on how the bloc can move to a more resource efficient and sustainable food system.

[lexisurl.com/iema16035](http://lexisurl.com/iema16035);  
[lexisurl.com/iema16036](http://lexisurl.com/iema16036)

3 Oct 2013

## Energy saving



Article 8 of the EU Energy Efficiency Directive (2012/27/EU) requires member states to introduce a regime of regular energy audits for “large enterprises” – companies with more than 250 employees and an annual turnover exceeding €50 million – to encourage the implementation of cost-effective energy efficiency measures. The first audit must be completed by 5 December 2015. Decc is consulting on its plans to implement the requirements of article 8 through an energy savings opportunity scheme.

[lexisurl.com/iema16027](http://lexisurl.com/iema16027)

11 Oct 2013

## Water SEA



The Welsh government is consulting on a draft strategic environmental assessment (SEA) that will influence the contents of its water strategy for Wales, which is due to be published in November 2013. The consultation document says the SEA will help to reduce any negative environmental effects from the strategy and ensure that water policy is developed, taking into account the health and resilience of the environment. The SEA fulfills the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004.

[lexisurl.com/iema16248](http://lexisurl.com/iema16248)

14 Oct 2013

## Aarhus Convention



The European Commission is seeking stakeholders' views on its draft third implementation report on the Aarhus Convention. The draft updates the previous report, which was submitted to the Aarhus secretariat in 2010. The convention, which was adopted in 1998, establishes a number of rights for individuals and associations with regards to accessing information and justice in environmental matters.

[lexisurl.com/iema16254](http://lexisurl.com/iema16254)

## New Guidance

### Sustainable construction

On the back of the London 2012 Olympic and Paralympic games, Defra has published a guide for the construction industry on sustainable procurement. The *Sustainable procurement for construction projects* guide ([lexisurl.com/iema16249](http://lexisurl.com/iema16249)) pulls together key lessons on procuring sustainable buildings and infrastructure, and contains case studies on the resource-efficient approach taken to constructing the velodrome at the Olympic park and links to other materials on sustainable procurement at London 2012.

### Energy efficiency

Decc has revised its tool to help organisations compare energy consumption by different domestic and non-domestic properties using the latest national energy-efficiency data. The table creator ([lexisurl.com/iema16252](http://lexisurl.com/iema16252)) enables users to develop bespoke cross tabs and charts on consumption by a property's attributes or characteristics. Users can select two variables, such as property age and property type, with mean, median or number of observations shown in the table. There is also a choice of fuel – electricity or gas.

### Biocides

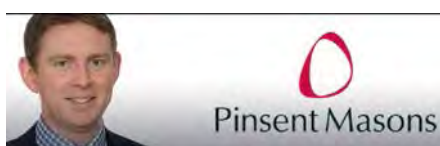
The EU Biocidal Products Regulation (528/2012) (BPR) came into force on 1 September, replacing the Biocidal Products Directive (98/8/EEC). The Regulation concerns the sale and use of biocidal products that aim to protect humans, animals, materials or items against harmful organisms, such as pests or bacteria, through “active” biocidal substances. To coincide with the BPR coming into force, the European Chemicals Agency has made available two new guides on biocides and on active substance suppliers ([lexisurl.com/iema16253](http://lexisurl.com/iema16253)). The aim of the biocides guidance is to provide detailed and practical direction on the study data and other information that should be submitted when applying for active substance approval or authorisation of biocidal products according to the BPR. The guidance on active substance suppliers explains the obligations for companies under article 95 of the BPR.

# Laying down the law



## Shopping for the best penalties

With enforcement of environmental regulation becoming increasingly devolved, **Simon Colvin** describes how organisations may soon be able to pick a jurisdiction



For some time, there have been concerns raised over the impact of devolution on environmental regulation. Many businesses operate across the boundaries of the devolved jurisdictions and being forced to deal with separate regulators and different controls is a headache. It also contradicts the approach being advocated by the UK government in its drive to simplify regulation for business.

However, it seems that the impact of devolution may not be all bad when it comes to environmental regulation. Devolution and the creation of separate regulators in each of the devolved jurisdictions have resulted in the prospect of “forum shopping” when it comes to environmental offences – that is, the ability to pick a jurisdiction to be tried in. One example of where this can be found is in the waste packaging regime.

### Producer responsibility

The Packaging Waste Directive (94/62/EC) came into force on 31 December 1994. It was implemented in the UK on 31 July 1996 and can now be found in the form of the Producer Responsibility Obligations (Packaging Waste) Regulations 2007 and the Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland) 2007 – together “the Regulations”.

The Regulations impose a regime that requires those producing packaging to finance its recovery and recycling. Different targets apply to different types of packaging. There are also requirements for packaging to meet certain minimum standards in terms of design and composition. The approach is based on the principle of “producer responsibility”.

A key aspect of the regime is the role of registered compliance schemes. Producers can join these schemes, which will then comply with the organisation’s packaging obligations on its behalf. The schemes do this by estimating the volumes of packaging their members will produce and then acquiring the required volumes of packaging recovery notes (PRNs) and packaging export recovery notes (PERNs) throughout the year.

However, problems in the glass PRN market earlier this year gave rise to the prospect of forum shopping. Irregularities in the market and the removal of two glass recycling companies led to a shortage of glass PRNs and a spike in their price.

Schemes that operate in the devolved jurisdictions have obligations on behalf of their members in each jurisdiction. PRNs and PERNs are not jurisdiction specific, so schemes are able to decide where they will surrender the recovery notes that they hold. This means that in the event a scheme does not have the required number of PRNs/PERNs to satisfy obligations in each of the jurisdictions, and if it is unable to source any more, it could legitimately choose the jurisdictions in which it wanted to comply.

### Different regulators

When deciding whether to comply in a jurisdiction, schemes are likely to consider the outcome of any enforcement action and the penalty options available to the regulators. Devolution means we now have four different regulators, the Environment Agency, Natural Resources Wales, the Scottish Environment Protection Agency (Sepa) and the Northern Ireland Environment Agency (NIEA). Since January 2011, regulators in England and Wales have been able to apply civil sanctions in relation to environmental offences, but neither Sepa nor the NIEA have such an option. The Scottish government is, however, undertaking a fundamental review

of environmental regulation and it is possible that civil sanctions will form part of a new approach, but that will not happen for a number of years.

Also, with new sentencing guidelines for environmental offences in England and Wales being finalised, we are starting to see some significant differences in the likely level of penalties and the sentencing options available across the UK.

Once the courts in England and Wales start to follow the new guidance, which is expected to be introduced in spring 2014, it is likely that courts in Scotland will follow suit in elevating the levels of fines for environmental offences. However, this will probably take time to filter through without any specific directions or requirements from the devolved administration in Edinburgh.


For now, if you were in charge of a producer responsibility scheme and could opt to breach the regulations in England and enter into an enforcement undertaking with the Environment Agency, that would be a much more attractive option than facing a criminal prosecution in Scotland or Northern Ireland.

It will be interesting to see the extent forum shopping plays in the future, as devolution and a divergence in approach to environmental regulation gather pace.

### Glass PRN fraud

In July, Swansea Crown Court jailed the directors of Nationwide Recycling Limited for four years each after they admitted fraudulently issuing glass packaging recovery notes (PRNs) during 2009 and 2010. Andrew Thomas and Paul Thomas used registration numbers from other vehicles, including a Harley Davidson motorcycle, to inflate the number of lorries delivering waste glass to the Llandarcy-based recycling firm so they could sell more PRN certificates. The court heard that Nationwide Recycling benefited financially from the fraud by £1.56 million. Undercover surveillance revealed that in just one month in 2009, the company fraudulently claimed £19,000 worth of PRNs.

**Simon Colvin** is legal director in the environment practice at Pinsent Masons LLP. Follow him on twitter @envlawyer.



# Support systems

Society must embrace natural infrastructure rather than rely solely on technical solutions, argues **Mark Everard**

**T**he word infrastructure typically conjures up images of dams and motorways, power stations and pylons, railways and airports. This technological infrastructure provides much of what we need in our day-to-day lives: we turn a tap expecting safe water, throw a switch expecting reliable power and visit a shop expecting the fruits of the world's soils and seas.

But where do the water, power and food come from? What of the materials and energy entailed in their production, purification and transport? And what breaks down our waste? Beneath our technological infrastructure lies a deeper infrastructure of natural processes. The word infrastructure has Latin roots: *infra* meaning "beneath" and *struo* meaning "to build". We're talking supportive foundations.

Ultimately, natural processes form and renew the soils that grow food, recycle water and regenerate the fish and forest stocks that humans plunder beyond sustainable limits. Waterwheels and windmills enabled people to harvest energy from solar-driven flows of water and air, evolving today into electricity-generating turbines. And much of humanity's demand for transport, heat and power is served by mining fossilised reserves of sequestered solar energy. Indeed, natural infrastructure provides, tidies and pays all our bills, and our ingenious built infrastructure merely routes it to our doors. However, technocentric conceptions about infrastructure are inherently dangerous if they blinker us from the ecosystems processes underwriting our continued wellbeing.

## Nature's foundations

Pre-industrial societies lived intimately with nature's infrastructure, as do billions of people today in the developing world. Droughts mean immediate

shortages of water, food and grazing. But we are all – privileged and subsistence-level alike – vulnerable to the degradation of natural systems, insulated by degree through technical innovations such as water storage, redistribution schemes and global trade.

The water cycle is a fundamental component of nature's infrastructure, recirculating, purifying and smoothing flows, and supporting all dimensions of human wellbeing. Habitat-scale natural infrastructure, including wetlands and floodplains, often play critical roles in influencing the quality, quantity, ecology and character of watercourses and water bodies, moderating profoundly their capacities to sustain human interests.

The atmosphere constitutes another macroscopic infrastructure system, deflecting radiation and circulating moisture, energy and gases, as well as distributing seeds, pollen and flying organisms. Landscapes and soil structure too constitute vital infrastructure, growing most of our food, supporting wildlife, trapping carbon, breaking down pollutants and moderating the water cycle across a mosaic of connected habitats. Largely, people remain oblivious to the services provided by these vital and interconnected systems. But if we use or abuse them beyond natural limits, degradation of system resilience and its multiple services is assured.

## Wake up call

Nature's infrastructure is of overriding importance to human wellbeing. The evolution of civilisations has been profoundly defined by, for example, the harnessing of water flows for irrigation and food production, transport, defence and power.

Focusing narrowly on technological means to harness and divert nature's wealth, but overlooking natural infrastructure itself, is dangerously shortsighted. Yet, much of our built infrastructure is





founded on exploiting one service, while overlooking “collateral damage” to nature’s life-support infrastructure and its many wider services to humanity.

Water supply, for example, commonly entails heavy engineering solutions such as dams and transfer systems of benefit to municipalities, with industries and irrigated landscapes receiving piped water and hydroelectric supplies. However, nature’s water infrastructure delivers an array of other services, including soil regeneration; habitats for fisheries; natural irrigation of croplands and grazing; regulation of local and global climate and hydrology; nutrient cycling; and sustenance for wildlife. These in turn support diverse livelihoods, though much of this value goes unrecognised.

Intercepting water for narrow purposes, while overlooking wider impacts on the natural infrastructure system, can generate multiple, underappreciated costs. This has implications for distribution, with advantaged and influential sectors generally benefiting disproportionately, while the inevitable costs are shared among those closest to the subsistence level. The net value to society, and hence sustainability, is questionable, though long-term detriment is assured.

This narrow mining of crucial ecosystems services at net cost to the integrity of wider natural infrastructure is all around us in the increased generation of climate-active gases and solid waste from wastewater treatment technologies; the disrupted hydrology and diffuse pollution caused by intensive land use; and the loss of habitat and fish stocks resulting from the construction of coastal defences. The consequences of ignoring natural processes underlie current sustainability challenges, including species loss and fishery collapse; deforestation and receding aquifers; air pollution; climate instability; soil erosion; and eutrophication.

### Rediscovering nature

Working with natural processes was generally the norm in pre-industrial times, and remains so for billions of people living non-industrialised lives. But this concept has, over recent decades, increasingly entered the vocabulary of flood risk and coastal defence; diffuse pollution; and fisheries and habitat management. This is loosening some established assumptions and generating some novel environment management solutions.

Among them is the rediscovery and application of local technologies for water capture to meet a diversity of livelihood needs. Traditional water harvesting techniques include:

- tank, anicut and johad systems in Rajasthan, India for groundwater recharge;
- zia systems in Burkina Faso to divert seasonal rains and organic matter into the soil;
- field-scale rainwater harvesting using bunds and troughs in South Africa;
- terraced agriculture throughout Asia; and
- fog-trapping nets in South America, whereby large pieces of material are used to make fog condense into droplets to be captured in a trough.

Fog harvesting could conceivably support reforestation in some areas; the restored natural infrastructure of trees would then perform the water-harvesting functions that are of significant benefit to people.

One example of rainwater harvesting techniques being used by industry is an SABMiller brewery in Neemrana, Rajasthan, that was formerly implicated in over-abstraction of groundwater. The site is now using the johad system – building earth dams on natural slopes to collect and store rainwater – to offset water use in manufacturing. Since the construction of the four water recharge dams, it is estimated that there has been a net rise of 9.44m in groundwater in the area.

Using old and new water harvesting techniques, at local and industrial scales, can achieve more sustainable outcomes if founded on the same principle of working with nature’s infrastructure.

The value of natural infrastructure is also being rediscovered in urban areas. So-called “green infrastructure” spans a broad range of techniques that protect, rehabilitate or emulate natural processes in the built environment, contributing to the breakdown of urban heat islands; managing runoff; and creating places for nature.

Sustainable drainage systems (SuDS) emulate natural processes to slow rainwater flows and encourage ground infiltration, contributing to urban flood management, pollutant control and green spaces. Green roofs, rain gardens, green walls, rainwater harvesting and water-neutral buildings, water sensitive urban design, urban river restoration, community

**Funding the building of earth dams in India has helped SABMiller to offset the water it uses in brewing beer by improving levels of groundwater**

The 'upstream thinking' project circulates funds from water firms to farmers to reduce polluting inputs, lessening the need for costly downstream treatment

forests and a range of other built environment innovations seek to address a range of issues. These include improving urban climate, air quality, noise and water flows, while promoting pollination, green transport routes, habitat and wildlife corridors. And urban technologies are converging and losing their distinctions as the potential of each to contribute to a wide basket of ecosystems services is realised.

Taking an ecosystems approach to spatial and transport planning yields multiple, formerly neglected benefits, including enhanced urban vitality, ecology and liveability, as well as economic returns, such as increasing the value of property. New York City's green infrastructure plan, for example, found that integrating such systems with more traditional urban infrastructure generated financial benefits of approximately \$1.5 billion annually. Similarly, an EU project on valuing attractive landscapes in the urban economy found substantial benefits arising from green infrastructure in European cities.

### Systemic solutions

Green shoots of innovation in supporting and developing natural infrastructure are evident across the world. However, they are still far from mainstream in public policy and business governance. Typically, the focus of any decision-making process – whether it is on investment banking or environment management – is on just one issue, rather than how issues link together. This silo mentality results in narrowly framed solutions, and we are blind to their ramifications for other dependent elements of nature's infrastructure.

Alternative sustainable solutions are required if we are to accumulate rather than erode the net value to society in an increasingly resource-constrained, more populated future. Systemic solutions are defined as low-input technologies that, rather than maximising single benefits, optimise the delivery of a wide range of ecosystem services.

Integrated constructed wetland (ICW) systems built in Ireland are a prime example of such an approach. ICWs treat waterborne wastes (such as dairy effluent, sewage and farmland runoff), sequester carbon, cycle nutrients and provide habitat for wildlife and amenity areas, as well as regenerating wetland landscapes.

Taking a catchment approach to managing pollutants entering rivers also represents a cheaper and more sustainable option than continued reliance on energy- and chemical-intensive techniques to remove pollutants downstream. Under the "upstream thinking" programme in South West England, the Westcountry Rivers Trust works as an intermediary circulating funds from water companies to farmers to reduce polluting inputs. The aim of the project is to improve raw water quality and manage the quantity of water at source, long before it reaches water treatment works, through improved land management. The benefit-to-cost ratio of the initiative, compared with conventional water treatment, is estimated to be as much as 65:1.

The transition to more connected ways of thinking requires going beyond historic silos. Rather, air quality, flood management, water quality, public amenity, wildlife and noise abatement come as a connected package from the processes performed by carefully designed or reinstated natural infrastructure. Conversely, net costs across the system accrue if the focus remains on narrowly framed technology-based solutions.

In an increasingly populated world with dwindling natural resources, humans can choose to learn from their mistakes or repeat them. Systemic solutions could provide a more sustainable way of delivering services without the unintended consequences associated with heavily engineered infrastructure. Ecosystems-based solutions have a significant role to play in delivering more benefits with fewer inputs.

The needs of humanity cannot be solely served by either technocentric or ecocentric solutions, however. Policymakers need to meld both to provide sufficient food, water and other critical resources for dense population centres on a planet where more than half the population clusters in cities. And, while a clever mix of solutions is essential to access critical natural resources, it cannot create the resources themselves. Recognising the value of natural infrastructure is central to sustainable progress, though bringing nature's infrastructure into the mainstream of policy and practice remains a daunting challenge.

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**Dr Mark Everard** is an associate professor at the University of the West of England and the author of *Common ground*.





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# Dammed success

**Kadenge Kamadi** reports on how one Kenyan village is tackling water scarcity by building dams that use technology first employed by the Romans in 400BC

**A**ccess to water has always been a big challenge for people in the developing world, with the situation particularly dire for communities living in arid and semi-arid regions. Not only does a lack of water impact negatively on agriculture – often the main economic activity – but in some instances, competition for this vital natural resource has led to conflict between communities.

Villagers in one dry part of Kenya are increasingly using sand dams as a way out of this problem. This relatively low-cost, low-maintenance technology, developed by the Romans in 400BC, has put Masongaleni in the Kibwezi division of Makueni county on the map as a perfect example of what is possible through rainwater harvesting and dry-land management.

## Dryer and dryer

Masongaleni village lies about 300km east of Kenya's capital Nairobi. The village is accessed by a deeply gullied dirt road 40km from the main highway linking Nairobi to the country's second largest city, the port of Mombasa. With annual rainfall totalling as little as 300mm, meaningful agriculture is not possible

in Kibwezi, which has a population of 170,000. By comparison, Kitale, where much of Kenya's maize is grown, has an average annual rainfall of 1,269mm. The fact that the Kibwezi can go for months at a time without a drop of rain confirms the area's status as an arid region. "Kibwezi has been a food insecure region for many years and aid has remained a major source of food for the majority of people here," says Mary Muteli, the officer responsible for the area at Kenya's ministry of agriculture.

Things are beginning to change thanks in large part to the construction of sand dams, which are providing a much needed lifeline to villagers. The residents are now able to meet their domestic water needs along with those of their livestock as a result, and they have become less dependent on rainfall to grow their crops.

They are also able to irrigate their farms, which was something they had previously not been able to do. "Water from the dam irrigates our fruit trees. We were advised to construct terraces and plant pawpaw and mango trees, which are doing very well here," says Cyrus Muloki, a member of Ngoloosi self-help group.

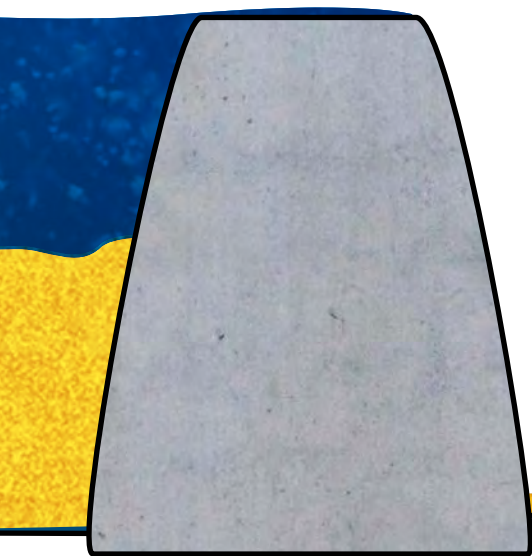
The group, which has more than 50 members, is one among many in the area formed by villagers to help alleviate the water scarcity problem. In 2011, the group constructed a sand dam on the Kwa Kasolo River. This project has helped the members, who each now own at least 10 fruit trees. One farmer, Jonathan Kituku, has successfully planted *Melia vokensii*, a fruit tree common to east Africa, intercropped with mung beans on a large scale. He has been able to make good money as a result.

## Working together

The sand dams are constructed of locally available materials, and the villagers have been trained to build the dams by technicians from the Africa Sand Dam Foundation (ASDF) in collaboration with SearNet, a network of rainwater harvesting associations. These non-governmental organisations, working with various partners, have helped build more than 70 dams in the region, benefitting 21,000 households and 85,000 villagers. ASDF is currently working with 42 village groups in Kibwezi and is planning to construct 45 more dams by the end of the year.



A completed sand dam in Kibwezi



## Sand dams: the facts

Sand dams are a relatively low-cost, low-maintenance, rainwater harvesting technology.

A wall is built across a seasonal river to trap and store rainwater runoff in sand that builds up behind the dam over two-to-three seasons.

A 4m x 90m dam can hold up to 10,000m<sup>3</sup> of water – enough for 2,500 people, plus their livestock and agricultural irrigation needs.

“Sand dams have helped to raise the water table in this area, meaning that farmers can now grow crops with relative ease,” says Jacqueline Naomi, a water technician working with ASDF. According to Naomi the high success rate of ASDF projects stems from empowering villagers to seize ownership of the dam initiative from the outset.

The construction of the dam is a community driven process, she explains. The villagers identify the appropriate site for the dam and provide construction materials such as sand, water and stones, as well as free labour during construction and for regular maintenance.

“ASDF chip in with the technical knowhow and skilled manpower, in addition to donating hardware materials such as cement, steel and timber,” says Naomi.

### More than a water source

Despite the area's low rainfall, massive runoff of between 1,150m<sup>3</sup> and 2,600m<sup>3</sup> is generated per hectare, pointing to the region's huge potential for rainwater harvesting. The water can be stored either in the soil or in surface and underground reservoirs.

A sand dam is a reinforced concrete wall built across a seasonal river to trap and store water underneath sand that is collected within the wall, thereby preventing excessive evaporation. The dam wall is typically 4m in height and 90m across, and fills with sand after two or three seasons. “One metre of sand makes evaporation virtually impossible,” says Andrew Musila, development director at ASDF. A 4m x 90m dam can hold between 2,000m<sup>3</sup> and 10,000m<sup>3</sup> of water, enough to cater for the needs of 2,500 people and their livestock, as well as agricultural irrigation. “When the dam is full of sand, the community will have a constant water supply for four years without the need for rain,” explains Musila.

By filtering water and cleaning it in the storage process, the sand prevents parasites from contaminating the water with harmful pathogens. Incidences of malaria and diarrhoea, which are partly responsible for high mortality rates in children under five in Africa, are drastically reduced as a result.

There are important factors to consider when deciding on the suitability of a sand dam site. This includes the existence of bedrock running across the

river channel and the availability of sand in the river. The bedrock is needed to prevent the loss of trapped water through seepage, while the deposited sand contains the water and prevents evaporation.

Besides sand dams, other water harvesting methods are also proving useful to villagers, such as the construction of semi-circular bunds, or “oduorims”, and trapezoid-shaped ponds – which are designed to collect as much water as possible. Already, more than 200 trapezoidal ponds have been constructed in Kibwezi. The ponds have helped villagers grow vegetables, fruit trees and cereal crops, such as sorghum. They have also been important in growing pasture for livestock.

Given that women and children in rural Africa spend an average of six hours each day trekking 6km looking for water, these water harvesting techniques are saving time and effort that is put better to use elsewhere. In addition, during the drought period, the little water that is available from open water sources is usually unhygienic, heightening the risk of contracting waterborne diseases.

One of the key advantages associated with water harvesting is that small-scale irrigation of vegetables



A typical sand dam can hold enough water for 2,500 people





Villagers scoop water from a sand dam

works well. Villagers' incomes have been boosted because vegetables can now be grown all year round, unlike before when the planting had to coincide with the rains. In addition to improving livelihoods, food security in the region has also been enhanced.

Joyce Kasyoki uses irrigated water from a trapezoidal pond on her farm to grow mango trees, tomato plants, kale and a grass that is converted into hay. She sells bales of hay for 200 Kenyan shillings (KES) each, around \$2.50, and a bunch of 10 kale leaves for KES 6 (\$0.07).

## Providing every African with access to water and sanitation would boost the economy by \$33 billion

### Supporting ecosystems

The raised water table in the Kibwezi area has made it possible to establish tree nurseries near the sand dams. This is helping to rehabilitate ecosystems in the dry land, and the trees provide up to 90% of the fuel needed by the rural population in Africa, relieving women of the burden of spending two hours a day looking for firewood.

At another level, the trees being planted in the nurseries are chosen because they are fertiliser trees and fodder shrubs. Villagers have been trained in agroforestry techniques by the World Agroforestry Centre (ICRAF) on how to grow the trees and use them in their farms. These fertiliser trees include a species of acacia popularly known as whitethorn, or *mkababu* in Swahili, whose deep-penetrating root system makes it highly resistant to drought; and *Sesbania sesban*, commonly known as the Egyptian rattle pod.

These tree species fix nitrogen in the soil, enriching it, and are important for rural farming populations who have virtually no access to commercial fertilisers. Also, foliage from these trees provides feed for livestock and the high nitrogen content has been shown to increase milk production. ICRAF has evidence that these fodder shrubs have a high impact on net income

from milk production; increasing the Kenyan dairy sector's turnover by up to \$29.6 million over the past 15 years. For the average, resource-poor dairy farmer milk production has been increased from five litres to 50 litres a day through the addition of fodder shrubs into animal feed. An estimated 225,000 smallholder farmers in East Africa grow Egyptian rattle pod trees, for example, to help feed their dairy livestock.

### Raising resources

Research shows that rainwater harvesting remains pitifully low in Kenya. Just 1% to 3% of the rain that falls on the country is harvested, with the rest flowing into the ocean. The main reason is because the resources to construct water harvesting technologies, such as sand dams, although relatively cheap, are still costly for many villages. According to Naomi at ASDF, a standard sand dam would cost about KES 700,000 (\$8,400), not including labour.

"In addition, the region's topography matters a great deal, with only populations near a river benefiting, rather than those living further away," says Kipruto Cherogony, a soil and water engineer at SearNet. Hilltop communities in particular are at a disadvantage, because pumping water uphill is very expensive.

"To ensure the success of projects and keep costs at a minimum, we have to start with the best sites and they are not readily available," explains Cherogony. The best sites for sand dams are in rivers which already contain deposited sand, he says, and these are usually large rivers.

The implications of improving access to clean water in Africa cannot be overstated, according to a new report from charity WaterAid. Published in March, *Everyone everywhere* reveals that the lack of progress made in improving access to water, sanitation and hygiene in the continent is hampering economic and human development, particularly in child health, nutrition and education.

Figures produced by the World Health Organisation (WHO) reveal that Africa could gain \$33 billion each year if every citizen had access to water and sanitation. Of this, \$4.5 billion would come from reduced healthcare costs; \$7.2 billion could be gained from reduced mortality rates; \$2 billion from fewer work absences; and \$19.5 billion in time saved – on activities such as walking to collect water. The Institute of Health Metrics estimates that 550,000 people die of diarrhoea diseases every year in sub-Saharan Africa. The vast majority (88%) can be linked to lack of water, sanitation and hygiene, says WHO.

In the words of the Liberian president, Johnson Sirleaf: "It will not be possible to make progress in eradicating poverty, reducing inequality and securing sustainable economic development in the future without improving access to water." And, with every dollar invested in water and sanitation producing \$4 in increased productivity, according to WHO, the construction of sand dams in Kenya is providing a crucial source of water and economic prosperity.

**Kadenge Kamadi** is a journalist based in Kenya.



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# Financing savings

A lack of capital can prevent firms installing energy efficiency equipment, but there is money available. **Paul Suff** takes a look at some of the funding options

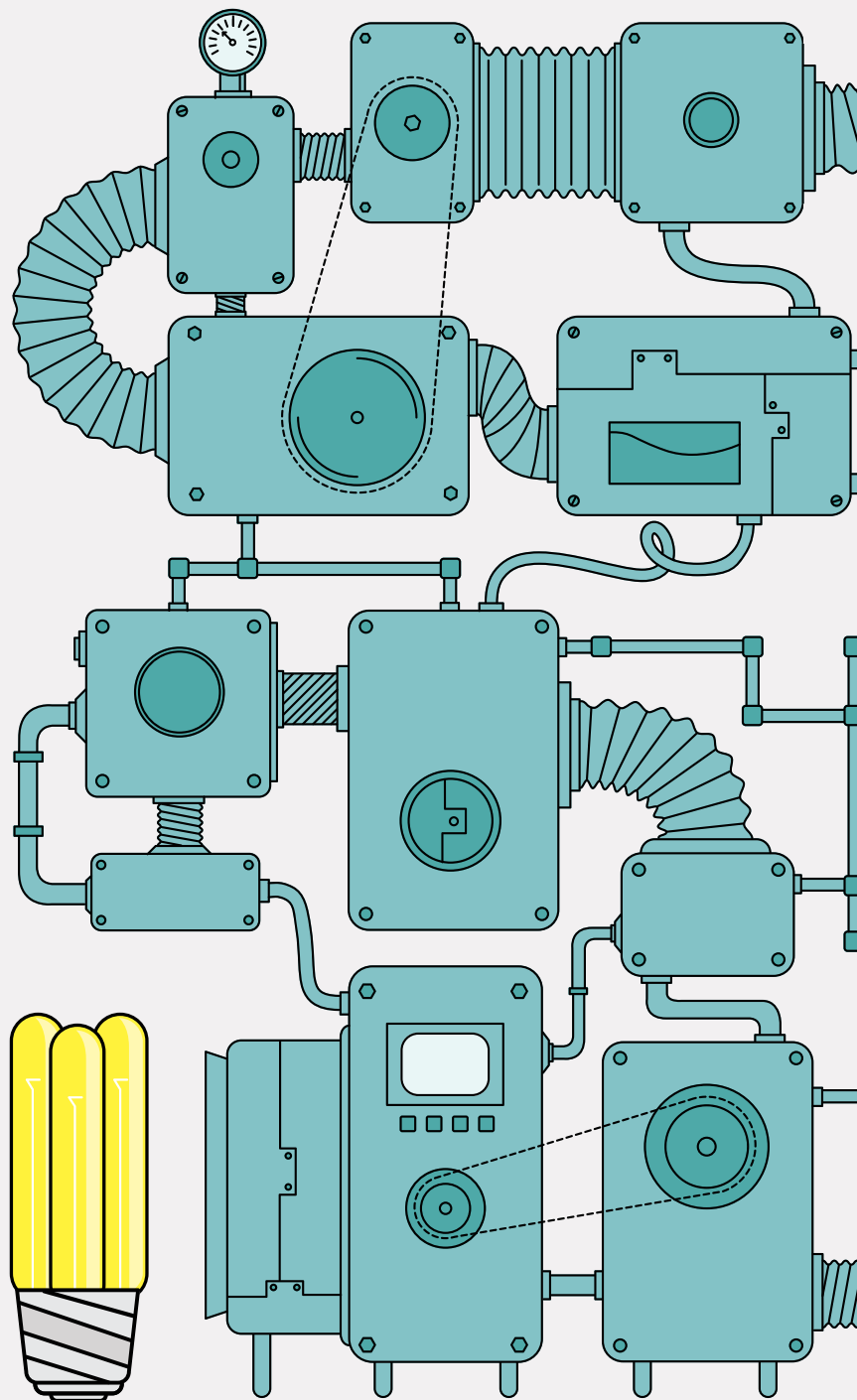
**E**ffective energy efficiency is about cutting out waste and increasing profits, announced energy minister Greg Barker, when he revealed the government's planned energy savings opportunity scheme (ESOS). The scheme, which is being developed to ensure the UK complies with the Energy Efficiency Directive (2012/27/EU), will require large companies (those with more than 250 employees) to assess their energy use every four years. Decc estimates that implementing the cost-effective energy-efficiency opportunities identified by the audits could save the average large business £56,400 a year on its energy bills.


The energy department also calculates that if just 6% of the potential energy savings identified through ESOS assessments are implemented, it would provide a net benefit to the economy of £1.9 billion in 2015–30. If uptake is greater, the savings could be as high as £3 billion. The potential carbon savings are also huge. Government figures suggest that if the UK were to consume only the energy it really needs, the country could save 196TWh in 2020, equivalent to 41 million tonnes of CO<sub>2</sub> (MtCO<sub>2</sub>).

Improving energy efficiency does not necessarily require a huge investment, but a lack of affordable finance options is often a barrier to installing equipment that can significantly reduce energy bills. "Businesses can find it difficult to access finance, and some will face high interest rates that can result in energy efficiency investments no longer being cost effective," acknowledges Decc's energy efficiency deployment office, which was launched in 2012.

Access to funding has been further constrained by the banking crisis, which has made financial institutions more reluctant to support business investment. The green investment bank, which has made energy efficiency one of its five priority areas for financial support, says investing in such equipment "has been badly impacted by the disruption in the market for long-term debt finance", adding that "this market remains thinly served and lacking in liquidity". Spending cuts are having a similar impact in the public sector.

Analysis by the Carbon Trust and Siemens Financial Services, which jointly operate the energy efficiency funding (EEF) scheme, revealed in 2011 that in England alone around 400,000 companies were finding it difficult to raise bank loans to invest in energy





efficiency. However, there are a number of schemes to help private companies and public sector organisations deliver projects designed to cut energy use. Here, *the environmentalist* looks at some of the main options.

### Dealing in efficiency

The green deal scheme, which opened at the start of 2013, is available for both domestic and non-domestic properties. Under the initiative, companies registered as “providers” fund the cost of installing energy-efficiency measures recommended in a green deal advice report, following a survey of a commercial property. The 45 technologies qualifying for funding under the commercial green deal range from air-source heat pumps and duct insulation to flue-gas heat recovery and secondary glazing.

There is no upfront cost to the owner of the premises as the loan is attached to the property. A so-called “golden rule” principle ensures that the expense of installing measures is no more than the savings made on energy bills over the lifetime of the loan. Electricity suppliers collect payments through electricity bills and the repayment plan remains with the property even if ownership changes.

As the government’s flagship energy efficiency scheme, the green deal should be one of the first ports of call for companies seeking financial aid. Unfortunately, there remains a lack of funding for commercial deals. A spokesperson for the Green Deal Finance Company, which was set up to be the main source of funding for green deal providers, told *the environmentalist* in August: “As far as we are aware, there are no providers currently financing non-domestic green deals.”

Tim Hipperson, director of energy services at Utilitywise, says the problem is largely due to the lengthy and expensive assessment process. “It’s a long journey from the assessment to putting a deal in place. A green deal assessment may recommend replacing T12 lamps with T8s, for example, but provide little information on how many lights need changing, where they are located or whether there are any challenges involved in installing them, such as the need for a cherry picker,” he explains.

“As a result, an additional feasibility study is necessary, which adds to the expense, before a provider can assess the cost of the project and determine whether it meets the ‘golden rule.’”

Hipperson believes Deca is banking on forthcoming changes to the rules governing energy performance certificates to kick-start the commercial green deal. From April 2018, it is likely to be illegal to rent a business property that has an energy-efficiency rating of F or G – around 18% of commercial properties in the UK – unless the landlord has carried out the maximum package of measures that can be funded under the green deal. Hipperson also says the introduction of the ESOS could boost interest in green deals for non-domestic properties, particularly if the government decides that the audit – the first of which is due in December 2015 – will exempt buildings from the need to have a separate green deal assessment.

#### Muswell Hill Golf Club

In April, the club, based in north London, became the first commercial enterprise in the UK to have a non-domestic assessment report logged on the green deal register. The assessment was provided free by Haringey Council.



#### North East Convenience Stores

The retailer, which runs 18 stores in the North East of England, financed the installation of energy-efficient refrigeration and LED lighting, through the energy efficiency fund operated by the Carbon Trust and Siemens Financial Services. The firm will see a return on its £50,000 investment in less than 2.5 years. The whole process, from applying for funding to having the equipment installed, took just four weeks and electricity bills have fallen by 40%.



### A trusted alternative

Between 2001 and March 2012, the Carbon Trust provided more than 4,500 businesses with a total of £185 million in loans for investment in energy efficiency measures, saving UK firms over 4.7MtCO<sub>2</sub> and £550 million on energy bills. Initially, the money was largely government-backed, interest-free loans, but, since April 2011, as the coalition sought to reduce its expenditure, financial support has mostly been through a partnership with Siemens Financial Services.

Under the arrangement, consultants from the trust assess the potential for energy savings at an organisation or provide advice on whether a planned project will deliver an adequate reduction in energy costs. Like the green deal, the financing package is designed to pay for itself through energy savings, resulting in no net cost to the borrower. “We need to know whether the figures stack up,” explains Bruno Gardner, director of energy efficiency ventures at the Carbon Trust.

The £550 million EEF scheme with Siemens offers finance to organisations that have been trading for more than 36 months and are seeking to reduce their energy use. “We fund projects costing £1,000 upwards,” confirms Gardner. “The scheme is designed so that anticipated energy savings match or exceed payments. It’s similar to the green deal’s golden rule, though I’d describe our approach, which includes expert assessment, as ‘green deal+’,” says Gardner.

Payments, which are fixed, can be spread over one to seven years, possibly longer. Gardner explains that finance is designed to be both tax efficient (payments are generally deducted from taxable profits) and to leave existing lines of credit, with banks for example, intact.



### Cambridge University Hospitals NHS Foundation Trust

Green  
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The green investment bank (GIB) is providing 50% of the funds for a new low-carbon energy centre that will save the trust almost 30,000 tonnes of CO<sub>2</sub> a year. The bank's £18 million contribution to the overall cost of the facility, which will include a combined heat and power plant, a biomass boiler and heat recovery solutions, has been matched by private investment firm Aviva Investors. Gregor Paterson-Jones, managing director at the GIB's energy efficiency arm, describes the deal as a "landmark", reducing energy costs and the trust's liability for the asset. The new energy centre will come into operation in 2015.

Accredited suppliers of energy-efficient lighting, heating, ventilation, air conditioning and industrial process technologies, such as compressed air, refrigeration or specialist production equipment, will arrange finance with Siemens or a customer can apply directly. In July, the trust revamped its list of recognised suppliers – which now number 48 – and published a supplier directory online ([lexisurl.com/iema16187](http://lexisurl.com/iema16187)) that enables users to search by technology, location and finance package. According to Gardner, only companies demonstrating high levels of technical proficiency, evidence of consistent delivery of low-energy solutions and first-class customer care are accredited.

Organisations in Wales and Northern Ireland continue to have access to government-backed financial support through the Carbon Trust, as the devolved administrations have maintained funding. In 2011/12, the trust provided interest-free loans totalling more than £1.4 million to small and medium-sized enterprises (SMEs) in Wales for the installation of energy-efficient equipment, while SMEs in Northern Ireland received £2.3 million. In Scotland, the trust provides advice and support to businesses and the public sector on energy efficiency through its advice line, online technical content and web tools.

### Banking on capital

The green investment bank (GIB), which was launched in November 2012, has set aside £100 million of its £3.8 billion in seed funding from the government to invest in non-domestic energy efficiency (NDEE) initiatives. While direct funding from the bank is mainly targeted at large deals – generally single or portfolio deals worth more than £30 million in total transaction size – it has contracted two fund management companies to assist in financing smaller NDEE projects. Gregor Paterson-Jones, managing director at the GIB's energy efficiency arm, explains: "We have to aggregate energy efficiency projects to reach scale, as even owners with large property portfolios and who are proactive in improving the efficiency of their buildings will not invest enough each year to qualify directly for GIB funding. Placing capital with specialist funds helps to overcome this."

The GIB has committed £50 million each to the energy-efficiency funds established by Sustainable Development Capital, a specialist financial and investment advisory firm, and Equitix, a company with

experience of delivering and managing infrastructure projects. The funds will typically provide 100% of the upfront costs for installing energy-efficiency measures in return for a share of the energy savings achieved.

The GIB is subject to a "double bottom line", which means its investments must achieve a significant green impact, as well as a financial return on investment. The green impact measure focuses on: reducing greenhouse-gas emissions; advancing efficiency in the use of natural resources; protecting and enhancing the natural environment and biodiversity; and promoting environmental sustainability.

Energy-efficiency investment opportunities for the GIB are spread mainly across renewable heat, combined heat and power (CHP), outdoor lighting, industrial processes and smart meter technologies. "CHP is the most established sector," says Paterson-Jones. "The framework for investment is well understood and there is scope for considerable investment in this sector."

He says the bank is interested in partnering with public sector bodies to develop funding programmes, as the GIB believes that some of the most concentrated opportunities for NDEE investment can be found in the NHS and across local authorities. Paterson-Jones singles out upgrading street lighting for significant investment growth over the next two years. "Competitively priced LED technology has come of age and can now deliver significant energy savings and carbon reduction," he says, adding that "it opens up the opportunities to integrate street lighting into smart cities initiatives."

Aside from the GIB, the Royal Bank of Scotland (RBS) launched its carbon reduction fund in December 2012. The £200 million fund aims to help businesses reduce their energy costs by financing projects, such as retrofitting buildings with more energy efficient heating and lighting. The initiative is backed by the government's "funding for lending" scheme, which enables RBS to offer lower interest rates to companies, and will provide finance to firms with an annual turnover of £25 million.

### Public finances

Salix Finance is one of several providers of finance for public sector organisations requiring capital to invest in energy efficiency. The not-for-profit company is funded by Decc and the devolved governments in Scotland and Wales. Its energy-efficiency loans scheme offers interest-free finance. It also operates matched funding arrangements, which are placed in a "ringfenced"

### Kingspan Insulated Panels

Further measures to improve the energy efficiency of the company's main manufacturing site at Holywell, North Wales, will be financed through a £5 million package from the energy-efficiency fund operated by Sustainable Development Capital. The project involves the installation of energy metering, building management systems, a lighting upgrade with a digital control system, motor replacement, a compressed air system upgrade and fan optimisation. The project is expected to cut electricity consumption by up to 15%, making it easier for renewable technologies at the site to meet demand, and is part of Kingspan's plans to achieve net zero energy by 2020.

Green  
Investment  
Bank

### King's College Hospital NHS Foundation Trust

**SALIX**  
Delivering Energy Efficiency

Salix funded the £300,000 cost of installing a condensing flu gas economiser to improve boiler heat recovery. It will save the trust more than £2 million and cut 18,000 tonnes of CO<sub>2</sub> over its lifetime. The equipment will achieve payback within 18 months.

sustainable fund to be spent on proven energy-saving projects with a payback of less than five years.

The company, which offers finance for more than 120 types of energy-efficiency technology, reports that projects typically pay for themselves within 3.5 years and have a lifespan of 13.5 years, providing 10 years of energy savings at no cost. To date, Salix has funded more than 9,000 projects with 662 public sector bodies, including schools, local authorities, NHS trusts and higher education institutions. The total value of these projects is £194 million, and they are estimated to be saving the public sector £56 million each year and £750 million over their lifetimes. Annual carbon reductions will total 340,000 tonnes and almost 4.5 million tonnes over the lifetime of the projects.

To be funded, energy-efficiency projects must meet lending criteria, including maximum payback periods and maximum costs per tonne of carbon saved. In Wales, for example, where the scheme is administered by the Carbon Trust, a project must pay for itself in energy savings within eight years and the cost of CO<sub>2</sub> must be less than £200 per tonne. In addition, there is a minimum £500 value for any single project and a minimum application and loan value of £5,000.

Local authorities with statutory powers to borrow may also be able to access finance for energy efficiency from the Public Works Loan Board, which is part of the UK Debt Management Office (DMO). It will lend eligible authorities up to the available capacity in a council's legal borrowing limit, with loans secured against the revenues of the authority. The board offers both fixed- and variable-rate loans, with rates determined by the DMO.

A number of national and local funding programmes have been established to finance public sector energy-efficiency projects. The London energy-efficiency fund is one example. The £100 million scheme, financed by the European Regional Development Fund (ERDF), is available to public and private sector organisations for projects requiring between £1 million and £20 million to refurbish or retrofit buildings in the capital before the end of 2015. In July, £80 million remained in the fund.

The Cambridge Retrofit Programme is another example, and will see £1 billion of public and private finance invested across the city in energy-saving measures, initially in non-domestic properties.

The devolved governments in Northern Ireland, Scotland and Wales each operate funding mechanisms for public sector. The Scottish government's central

energy efficiency fund, for example, helps finance efficiency and small-scale renewable energy measures.

Aside from the ERDF, other European funds can provide a further source of finance. The Joint European Support for Sustainable Investment in City Areas (JESSICA), for example, supports urban development projects, including energy efficiency improvements. JESSICA is a European Commission initiative, in cooperation with the European Investment Bank and the Council of Europe Development Bank, and investments can take the form of equity, loans or guarantees.

Targeted funding is also available for some parts of the public sector. The health department, for example, helps hospitals and NHS facilities to finance energy efficiency. In 2013/14, it is spending £50 million funding innovative projects to improve energy efficiency and reduce the carbon footprint of the NHS in England. The department says the investment should save the health service £12.5 million a year on energy costs.

### Hedging your bets

Energy-efficiency projects represent an investment opportunity: the returns tend to be substantially higher than those achievable through holding cash on short-term deposit. Gardner at the Carbon Trust says that payback from installing LED lights, for example, averages just two years.

Decc energy price forecasts for 2020 estimate that electricity prices in the services sector are likely to increase by 22% above inflation, while gas prices will go up by 15%. So, as energy prices continue their upward trajectory, the business case for investing in energy efficiency measures gets stronger and stronger.

### Tax breaks

The enhanced capital allowance (ECA) energy scheme aims to encourage businesses to invest in certain energy-saving equipment by providing tax allowances ([etl.decc.gov.uk/etl/site/etl.html](http://etl.decc.gov.uk/etl/site/etl.html)). Companies investing in a range of qualifying technologies – such as energy-efficient boilers, lighting, refrigeration equipment and energy metering and monitoring systems – can offset the entire cost in the first year against taxable profits in the year of purchase.

Only new equipment is eligible for an ECA and a list of qualifying technologies is published annually – several technologies are also eligible even though they are not on the list.

# The appliance of science

The University of Cambridge is harnessing brainpower to find new ways of cutting its carbon footprint. **Becky Allen** reports

**I**saac Newton, Charles Darwin and Stephen Hawking are among the greatest minds that have studied and worked at the University of Cambridge. Within its walls, the electron was discovered, the structure of DNA was mapped and the atom was split. But world-leading scientific research comes with a hefty carbon footprint. The university – which attracts the largest amount of investment for academic research in the UK – generated 77,604 tonnes of CO<sub>2</sub> in 2010, and has an annual electricity bill of more than £10 million.

So how can the university use its most prized asset – its collective brainpower – to put teaching and research on a more sustainable footing? The problem is not unique to Cambridge. According to the Higher Education Funding Council for England (HEFCE), in 2005 the sector emitted 5.4 million tonnes of CO<sub>2</sub>. Research-intensive universities, known collectively as the Russell Group, represented 15 of the 18 highest emitting higher education institutions in England, Cambridge coming in fourth after Manchester, Imperial College London and Southampton.

## Coming up with a plan

In 2010, HEFCE published its carbon reduction target and strategy for colleges and universities in England. The strategy sets overarching carbon reduction targets; requires institutions to set their own targets and develop carbon management plans; and provides financial incentives by linking capital funding with performance against CO<sub>2</sub> reduction plans.

Updated the same year, Cambridge's carbon management plan committed the university to reducing energy-related CO<sub>2</sub> emissions by 34% by 2020 against a 2005 baseline. Based on previous years' figures, the university is expected to generate 104,861 tonnes of CO<sub>2</sub> by 2020, so meeting its target will require a reduction of 61,324 tonnes.

Alongside meeting targets and saving money, there are other reasons for cutting carbon, says professor Jeremy Sanders, pro-vice-chancellor for institutional affairs: "Environment and energy are important from at least two perspectives. The first is purely financial. The

university's electricity bill is more than £10 million a year and if we don't do anything it will carry on increasing. Second, there's the question of leadership and our impact on the environment. The university has world-class research in energy, from fundamental physics and chemistry to applied engineering. We have a wonderful range of expertise in the research area; the question is, how do we apply that expertise in our own buildings?"

To harness that knowhow, in 2010 the university launched its energy and carbon reduction project (ECRP). With an annual budget of £2 million, the project is taking a scientific approach to cutting CO<sub>2</sub> by using five university departments as carbon reduction experiments. "The pilots have been chosen for their different patterns of energy use, the idea being to test ways of reducing energy consumption in those departments," Sanders explains.

Once identified, the best behavioural and technological ways of cutting energy use will be rolled out across the university. "That might mean more efficient pumps or computer cooling systems, but also everybody being more careful about turning off lights and computers. All those things contribute," he adds.

## Piloting change

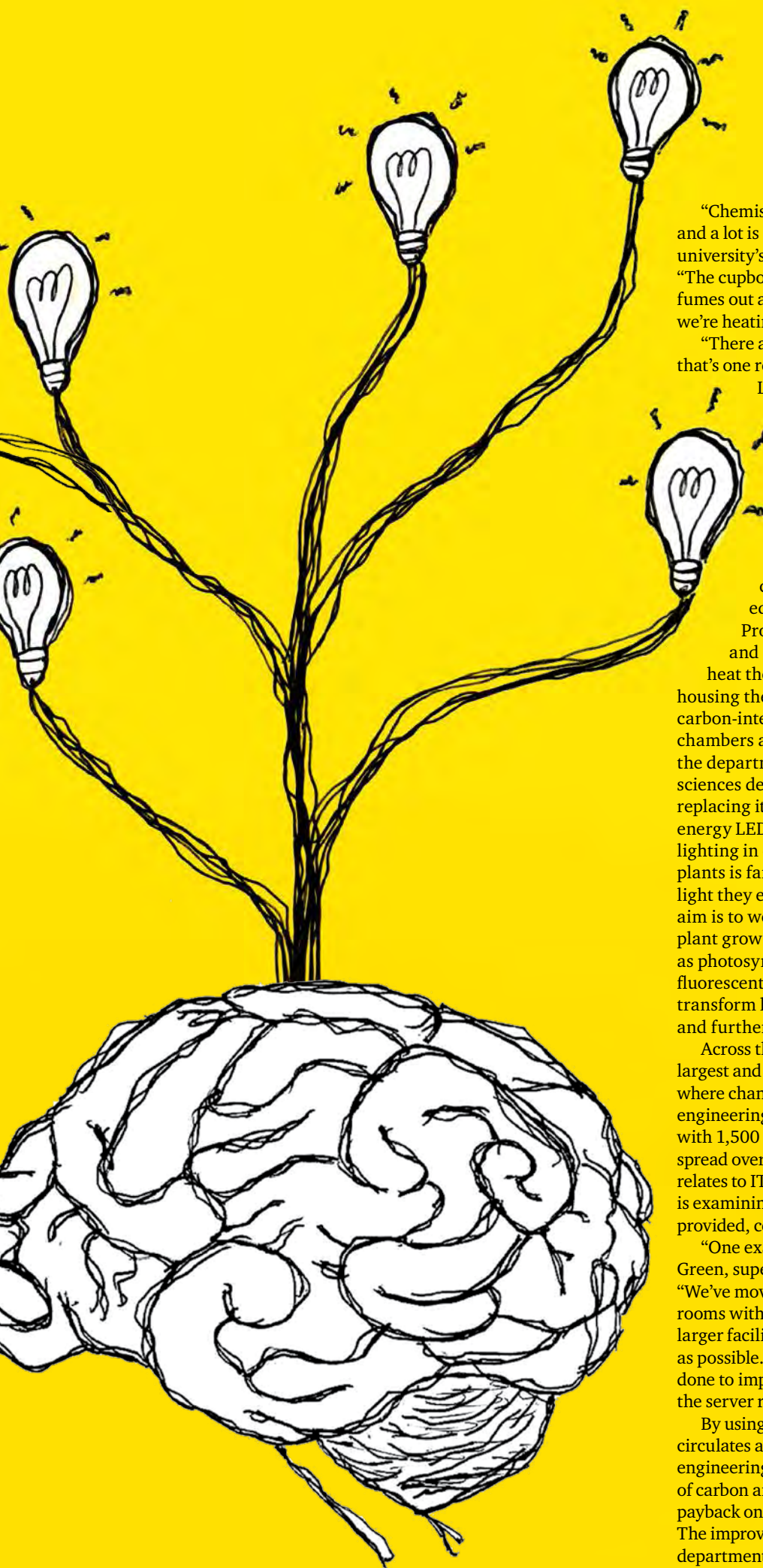
While the university is made up of more than 150 departments, faculties and schools spread over 300 buildings and covering more than 500,000m<sup>2</sup> of floor space, around 70% of the university's carbon emissions come from just 30 buildings. Between them, the five pilot departments – engineering, chemistry, plant sciences, the Gurdon Institute and the university library – accounted for 23% of Cambridge's total carbon emissions in 2010.

The pilots are addressing a wide range of issues. The library – which houses one of the greatest collections of books and manuscripts in the world – has the fourth largest carbon footprint in the university, and is examining the energy required to achieve the environmental control needed to preserve books and artefacts. Meanwhile, the chemistry department, which has an annual electricity bill of around £1 million, is focusing on fume cupboards.

**£10m**  
annual electricity  
bill for the  
University of  
Cambridge







“Chemistry uses 10% of the university’s electricity and a lot is down to the fume cupboards,” confirms the university’s environmental officer, Joanna Simpson. “The cupboards use air that’s been heated to push fumes out and the air then has to be heated again, so we’re heating air to expel it from the building.”

“There are 350 fume cupboards in one building, so that’s one reason the department was picked as a pilot.

Lots of other departments also have fume cupboards, so if we can work out how to reduce energy use in the chemistry department, we can retrofit it in other departments and learn lessons for designing new laboratories.”

### Lighting the way

Like fume cupboards, plant growth chambers are a piece of carbon-intensive equipment used widely across the university. Providing the light that plants need to grow and powering chillers to remove the excess heat the lighting generates, makes the building housing the plant sciences department one of the most carbon-intensive in the university – and plant growth chambers are the biggest energy-related challenge the department faces. As part of the ECRP, the plant sciences department is looking at the feasibility of replacing its 2,880 fluorescent tubes with lower-energy LED lighting. But while installing low-energy lighting in offices is a quick win, using them to grow plants is far less simple because of the spectrum of light they emit and the heat they generate. The trial’s aim is to work out whether LED lighting could provide plant growth, flowering and seed production, as well as photosynthetic performance similar to traditional fluorescent lighting. If successful, the project could transform how plants are grown indoors at Cambridge and further afield.

Across the university, IT equipment is one of the largest and most ubiquitous electricity users, and one where changes could net significant carbon savings. The engineering department is the largest in the university, with 1,500 students and 600 full-time equivalent staff spread over seven buildings. Around 50% of its baseload relates to IT. For its part of the ECRP, the department is examining how heating, lighting and ventilation are provided, centralising and updating key services.

“One example is our computer rooms,” says David Green, superintendent of the engineering workshops. “We’ve moved from having several small computer rooms with two or three racks of servers to two much larger facilities, and then we’ve made them as efficient as possible. We’re particularly proud of the work we’ve done to improve the energy efficiency of the cooling in the server rooms.”

By using evaporative cooling (which cools and circulates air through water evaporation), the engineering department is saving hundreds of tonnes of carbon and £75,000 a year on its electricity bills – payback on the investment is expected in just five years. The improvements also make a major difference to the department’s performance under the university’s energy

## Switch-off week



The University of Cambridge held its first switch-off week in February 2013. During seven days of lectures, competitions, guided tours and an energy and environment roadshow – which featured an energy bike and a pledge tree – staff and students cut electricity use by 50,484kWh or 2.1%. “It shows how the small effort of switching off idle equipment can lead to drastic cuts in overall energy consumption,” says Joanna Simpson, the university’s environmental officer. “If people maintained these habits for the rest of the year, the university would save £244,137 and 1,420 fewer tonnes of CO<sub>2</sub> would be released to the atmosphere.”

incentivisation scheme. The scheme consists of targets, fines and rebates designed to encourage individual departments to cut electricity use, even though bills are paid centrally. “At the end of 2008/09 when the scheme came in, we got a bill for £35,000 because we’d exceeded our energy use target. Our computer room has reversed that in one hit,” Green explains.

Engineering is also putting its own research into practice in the shape of an “energy roof”. The £1 million project will generate up to 61,188kWh a year and, instead of commercially available photovoltaic (PV) units, it uses panels developed at Cambridge that incorporate a microinverter and thin-film technology. “We’re putting PV onto one of our roofs, which will put energy back into the grid using technologies developed in this department. We’re proud of that,” Green says. “It means we can compare and contrast, and push the boundaries a bit.”

## Good behaviour

As well as changing technology, changing behaviour is crucial to cutting carbon and the fifth ECRP pilot has shown how well-planned initiatives can result in significant savings. Set up in 1989 to support research into cancer and developmental biology, the Gurdon Institute uses around 5 million kWh of electricity a year, giving it the third highest CO<sub>2</sub> emissions in the university.

Deciding to focus on behaviour change for the pilot, the Gurdon held an exhibition in 2012 and asked staff to sign a pledge to be more energy aware. Then, between March and September, it ran a competition to see which laboratory could reduce its energy use most each month. The results were impressive, says Kathy Hilton, facilities manager at the Gurdon: “You see places lit up like Christmas trees and wonder

what the point is of saving a couple of kilowatts on your computer. But we’ve shown that little savings from everyone make a big difference.”

The winning laboratory is led by professor Andrea Brand. “They took it really seriously and transformed their whole culture,” says Hilton. “And the reductions persisted after the competition ended. Looking at the year-to-date, 80% of the laboratories have managed to reduce their energy consumption, and the Brand lab [looking at nervous system development] has cut energy use by an impressive 60% overall.”

## Next generation

Headline projects, like the ECRP, sit alongside efforts by the university to encourage staff and students to save energy and to embed carbon reduction in their teaching, learning and research. The university’s network of environmental coordinators and energy champions is helping to support these sustainability aims. More than 180 staff volunteer to take on these roles, and they cover 91% of the university’s departments and offices.

For the past two years, web services manager Sarah Cater has been environmental coordinator at the Cambridge Judge Business School, where she’s examining how to save paper by making more material available online. Over coming months, she will be monitoring paper consumption and the time staff spend producing printouts, and asking users for their views. “Our executive MBA programme is a great example of how it can work. Delegates are mostly from overseas and the programme is 100% paperless,” says Cater.

Cambridge students are crucial too, both now and in the future. Energy and sustainability are formal elements of many courses, from architecture and engineering to environment policy and manufacturing, but students are also being encouraged to tackle these issues through undergraduate or postgraduate research projects. In engineering, live data from the energy roof are being used in undergraduate teaching and PhD projects, and an MPhil architecture student is researching energy efficiency in listed buildings – he has 77 to choose from across the university – as a part of the “living laboratory for sustainability” project, funded by financial services company Santander. According to Simpson: “The project looks at initiatives students could undertake on the estate that will help us reduce our carbon emissions and address wider sustainability issues, at the same time as developing students’ skills and knowledge around carbon and sustainability.”

By increasing awareness of environmental issues, the university is helping to produce a new generation of citizens who are more aware of climate change and more able to tackle it. “The unique and greatest contribution Cambridge and other universities can make is intellectual,” Simpson says. “Cambridge graduates will go on to become business leaders and politicians of the future, and they could have a huge positive or negative impact depending on their viewpoint when they leave university.”

Becky Allen is a health, safety and environment journalist.



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# Constructing national EIAs

**Steve Pearce** on the differences between assessing big infrastructure projects and standard developments

**U**nder EU law, construction projects requiring planning consent that are likely to have a “significant effect” on the surrounding environment must undergo an environmental impact assessment (EIA). An EIA evaluates local habitats, species and communities, considers the potential impacts of a project and how environmental effects can be mitigated.

Nationally significant infrastructure projects (NSIP), such as the construction of a new power station or road, often have impacts across a large area, stretching across multiple planning authorities. In England and Wales, requirements for NSIP EIAs are outlined in the Infrastructure Planning EIA Regulations 2009 (as amended in 2012), rather than through the more familiar Town and Country Planning EIA regime. While the requirements for information to be included in an environmental statement are identical to those in schedule 4 of the Town and Country Planning EIA Regulations 2011, the procedural requirements of the 2009 Regulations, the Planning Act 2008 and the national planning policy place additional demands and create some interesting challenges for EIA practitioners.

## Planning authority

The Planning Inspectorate’s national infrastructure directorate (NID) is responsible for operating the planning process for NSIPs and for examining applications for development consent. The NID makes a recommendation to the secretary of state, who decides whether to grant or refuse consent. The national infrastructure planning section of the inspectorate’s website ([infrastructure.planningportal.gov.uk](http://infrastructure.planningportal.gov.uk)) provides a great deal of information relating to NSIP applications, including:

- details of individual NSIP applications (at the pre- and post-submission stages);
- information regarding the application process;
- links to legislation and policy (including national policy statements which provide the framework for the NID’s recommendations);
- government guidance; and
- a series of advice notes.

The inspectorate has published 16 advice notes covering a range of issues relevant to NSIP applications. A number of the notes are directly concerned with the EIA process or with matters informing the final assessment, such as stakeholder consultation, screening and scoping, the Rochdale envelope approach, and Habitat Regulations assessment. The sixth advice note also provides guidance on preferred document formatting and referencing. While the notes are not statutory guidance, they provide advice on what inspectors expect and prefer to see during their examination of an EIA. The notes support a standard approach to a number of issues beyond the detail provided in the 2009 Regulations.

## Screening and scoping

If a project is categorised as an NSIP under the Planning Act 2008 (as amended by the Localism Act 2011), it does not necessarily follow that the project is EIA development – though most are likely to be.

Schedules 1, 2 and 3 of the 2009 Regulations are largely the same as those of the Town and Country Planning EIA Regulations 2011. The notable exception is that schedule 2 of the 2009 Regulations excludes screening thresholds and criteria. Meanwhile, the inspectorate’s seventh advice note states: “The European Court of Justice has held that projects identified in schedule 2 should be given a wide scope and broad purpose.”

For a NSIP development that could be considered a schedule 2 project, the basis on which an EIA can be “screened out” is dependent on whether it can be demonstrated that the project is unlikely to have any significant effects on the environment, with no regard to any general indicative thresholds. A screening opinion must be sought for a NSIP from the secretary of state, who must then adopt a screening opinion within 21 days of receiving a notification.

A request for a scoping opinion may also be submitted to the secretary of state, the procedure and requirements for which are outlined in the



inspectorate's seventh advice note. The secretary will consult prescribed and, potentially, non-prescribed consultees and adopt a scoping opinion within 42 days of receiving a request.

The NSIP process takes a precautionary approach and casts a wide consultation net, both technically and geographically. Scoping responses may be received from consultees who are unlikely to have a strong interest in the project, due to the nature of the proposals or their distance from the site. Owing to the regulatory requirement to consult neighbouring local authority areas, as well as any within the zone of visual influence of a project, multiple local authority responses are also likely to be received, which may necessitate follow up communications and/or meetings to ensure mutually acceptable assessment work.

According to the inspectorate's seventh advice note: "Applicants should consider carefully the best time to request a scoping opinion. In order to gain the most from a scoping opinion, applicants should consider requesting the opinion once there is sufficient certainty about the description of the proposed development and the main elements likely to have a significant environmental effect."

This is important advice, as the scoping opinion is the main element of pre-application feedback relating to the EIA that will be received from the NID and the secretary of state. It is advisable to ensure that the scheme is sufficiently defined and certain prior to scoping, and that the approach to identification of likely effects and the proposed methods of assessment are adequately described in the scoping report.

Consultation with stakeholders to agree the details of assessment before submitting the scoping report can also be advantageous if time allows. Given that the scoping stage is an important opportunity to obtain EIA-specific comment from the secretary of state, it is crucial to provide sufficient information, particularly with regards to any issues that are proposed to be omitted from the assessment.

### The importance of consultation

A key difference between the EIA requirements for NSIP projects and those for Town and Country Planning projects is the need for formal consultation. The standard EIA process does ordinarily feature some level of consultation, but this may be limited to specific stakeholders, such as the Environment Agency and other relevant bodies. Public consultations can be undertaken, but they are largely dependent on the nature, scale, location and likely effects of the proposed project. The requirements relating to consultation with regards to a NSIP project, however, are more formally defined.

While many of the consultation requirements for a NSIP are likely to be fulfilled by dedicated members of the project team, the input required by the EIA team should not

be underestimated. Ongoing survey and assessment work will be needed to inform the consultation process, and to update published material, such as documents informing stakeholders of project progress, lists of frequently asked questions and assessment findings.

EIA practitioners working on NSIPs should be aware that these stakeholder consultations do have the potential to confuse and overload non-public consultees. Confusion can arise over what is formal and what is non-statutory public consultation. For example, informal consultation may take place during the scoping of the EIA, before the scoping request has been submitted to the secretary of state. The secretary of state will subsequently consult relevant stakeholders formally with regards the applicant's scoping opinion request, and then there will be further formal consultation in line with requirements of the Regulations – potentially with multiple consultation phases.

Confusion among consultees can be compounded by the potential similarity in the requests and the required responses. It is therefore important during initial contact to outline the planned consultation phases with any consultees unfamiliar with the NSIP process.

The consultation report must also include details of the how relevant responses have been taken into account, which demands careful consideration of the timing of consultation to ensure comments can feasibly be acted upon. Such details are also likely to be relevant for inclusion in the environmental statement.



### Preliminary data

In March 2009, the local government department launched a consultation on its proposals for the Infrastructure Planning EIA Regulations. The draft legislation included a requirement for NSIP developers to consult on preliminary environmental statements. However, respondents felt that such a pre-application consultation was inappropriate and the requirement was amended in the final legislation to require consultation on "preliminary environmental information" (PEI) instead.

Paragraph 8.19 of the explanatory memorandum to the 2009 Regulations details this change, but also goes on to state: "...clearly in order to be able to consult properly, any pre-application consultation will need to identify the likely environmental effects of the proposal."

There is relatively little guidance regarding PEI, with the most notable being the department's guide on the Planning Act 2008 pre-application process, published in January 2013. Unsurprisingly, the format and content of PEI varies considerably, from short summary documents to full draft environmental statements.

Regulation 2 of the 2009 Regulations defines PEI as information that has been compiled for inclusion in an environmental statement and is reasonably required to assess the effects of the development. This would suggest that any EIA work drafted at the PEI stage should be published and if the work is sufficiently

advanced, this could therefore resemble a draft or partially complete environmental statement.

Looking at the explanatory memorandum, PEI consisting of a draft environmental statement does not necessarily seem inappropriate; as the 2013 guidance notes, though, applicants may not be in a position to provide a full environmental statement during their consultation and it may not be the most appropriate way to present information on impacts and mitigation to all consultees. However, given the requirement for PEI, it would seem a wasted opportunity to not invite comment on as much EIA work as possible at the PEI/pre-application stage. The guidance acknowledges this, while highlighting that clarity of information is key.

The formalisation of pre-application consultation frontloads the NSIP EIA process, with the aim of teasing out contentious issues as part of pre-application work and reducing the number of points that require discussion during examination. The process also documents the resolution of issues and any remaining open points to present this evidence as part of the application. Formalised consultation throughout the EIA is the major difference between the process for NSIPs and for standard developments, and the element that is creating the most interesting challenges for practitioners.

**Steve Pearce**, CEnv, is a principal environmental consultant at URS Infrastructure & Environment UK.



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# Shaping the future

**Nick Coad and Paul Pritchard** explain why sustainability professionals must develop skills to support innovation

**C**oncepts such as the circular economy and shared-value business models show how radical and potentially disruptive innovation is at the heart of new sustainability thinking. Leading firms – including BT, Kingfisher, Kyocera, Marks & Spencer, Nike, P&G and Unilever – are focused on creating business opportunities from sustainability and developing new green products and services. Fostering innovation is an increasingly important part of the role of high-level sustainability professionals.

Innovation covers both the generation of ideas and their successful implementation. There is a big difference between coming up with ideas and ensuring they go on to achieve something. As the famous entrepreneur Thomas Edison said: “Vision without execution is hallucination.” It is also important to remember that innovation is a discipline that can be managed, but it requires a different approach to the traditional command-and-control processes used to manage environmental or social impacts, such as ISO 14001.

## Three phases

Innovation and sustainability activities can be classified using three phases based on the degree of change involved:

- I. Incremental changes – such as improving operational efficiency and altering existing products and processes.
- II. New products and services.
- III. Systemic or disruptive change that may involve new business models, platforms and ultimately the transition of whole sectors/economies.

The skills needed by sustainability executives and departments are very different for organisations working at phase I, compared with those at phases II or III. The table on p.34 summarises the opportunities for innovation and the skills needed to support it.

Phase I requires organisations to develop new processes, standards for operations and reporting – traditional command-and-control tools where technical subject matter expertise is vital. Moving up to phase III requires executives and teams with experience of

leading innovation or managing change, to create new business plans and brands. Correspondingly, there is also a need for a greater understanding across the business in the non-sustainability functions of the environmental and social impacts of their roles.

## Leadership position

Sustainability is about the big picture and provides the “meaning-of-life” type questions that are important in creating a sense of purpose for innovation. This means that sustainability professionals are well placed to lead on innovation in their organisation. Furthermore, they are also used to:

- working collaboratively with colleagues and external groups;
- working transparently in a way that builds trust in partnerships; and
- having large networks of like-minded contacts.

We are starting to see a convergence of sustainability and innovation and this trend is expected to continue. Nike is one organisation bringing the two elements together with spectacular results. The sports goods company describes sustainability as the world’s greatest innovation challenge. It says that retrofitting and fine-tuning the approaches of the past will simply not solve the problems the world is facing. “The world needs new systems, new business models, new relationships and new ways of thinking. Sustainability requires transformation, and innovation lies at the heart of that process,” states the company’s sustainability strategy.

Innovation will play an increasingly important role in the careers of sustainability professionals. There will be significant opportunities in the future for them to support and lead innovation but, unless they develop the right skills, they are likely to face increasing competition from those outside the sustainability profession for these roles.

**Nick Coad** and Paul Pritchard are partners at the consultancy Sandwalk and authors of *Leading sustainable innovation*. IEMA members can use code IEMA15 to save 15% when purchasing this book, or any other, from [dosustainability.com](http://dosustainability.com).

## The three phases of innovation and the skills needed by sustainability professionals

Phase I – Compliance, cost saving and reputation	Phase II – New products and services	Phase III – Systemic
Innovation	Innovation	Innovation
Low opportunity for innovation. Focus on best practice, using either established technology or through trials of new technology.	Using social and environmental insight to create new products and services. Work across internal departments and with external partners.	Develop new business models. Challenge the way the business operates and collaborate with third parties.
Skills	Skills	Skills
Understand command-and-control processes – standards and total quality management. Awareness of legal obligations. Knowledge of existing technology solutions in supply chain and how to trial new solutions. Write a report on non-financial performance and develop a supply-chain programme focused on social and environment performance. Help company participate in sector initiatives with competitors.	Understand products' life-cycle impacts. Aptitude for inspiring and managing internal and external specialists. Develop a network of potential innovation partners. Consumer insight and ability to create new value or service propositions. Ability to predict new market opportunities and to develop implementation strategies. Ensure the company can collaborate on cross-sector sustainability initiatives. Understand intellectual property rights.	Ability to set up new businesses. Experience of both change and brand management. Develop a new market – through gaining consumer insight and influencing behaviour. Ability to develop a large network. Support progressive public policy and build trust with third parties. Help establish external platforms to promote further innovation. Competence to coach and mentor executive colleagues.

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# Spotlight on the new chair of the board

## Dr Diana Montgomery discusses her career and the bright future she sees ahead for the environment profession and IEMA

"It's a very exciting time, especially as the Vision 2020 consultation is in its closing stages and the members seem to be really on board with what we're trying to achieve," says Dr Diana Montgomery, the new chair of the IEMA board.

The board guides the Institute's strategy and direction, ensuring that, in Montgomery's words: "Risks are managed, progress is monitored and, most importantly of all, it ensures we deliver an organisation that serves the members and meets their expectations."

The board this month also welcomes three new non-executive directors (see p.36). Montgomery believes that their appointments will prove extremely timely, coming at a time when the Institute is in the process of refining its focus and stimulating a course of member engagement.

"From what I've been told by Tim Balcon [IEMA's CEO], the members who have contributed to the Vision 2020 workshops absolutely support that the idea that the Institute should be about skills, development and the promotion of the profession," she says.

"I think we can safely say that we have some definite consensus that cuts right across IEMA's structure. That's not only very reassuring, but sets us up for a very exciting future."

In voicing her dedication to skills and the environment profession, Montgomery echoes Balcon's ambition for IEMA, which is to see increased uptake of environmental skills and to ensure that the environment profession becomes better recognised and understood.

"Essentially, we need to have as many skilled and qualified people out there as possible, all making a difference," she explains. "Collectively, we have an opportunity to become the first generation of practitioners that makes environment a mainstream profession."

"I'm really excited at what lies down the track, but that will not happen if we fail to work together and don't combine IEMA's energy with the membership's passion. Environmentalists are unusual in that we are probably much more passionate about

our careers than is typical, so it seems only natural that we would want to use that to our advantage."

Montgomery is chief executive at the Construction Products Association (CPA), having previously been deputy CEO and director of commercial affairs at the Chemical Industries Association and head of environment at both Centrica and the AA. She has been involved with IEMA, either as a member or board representative, for more than 20 years.

She explains that her pre-CPA experience was "very mixed", and was perhaps representative of the breadth and reach of the environment profession.

"I have definitely benefited from being able to move around the profession," she says. "After completing my PhD and lecturing at Imperial College London, I worked for a number of large corporations, ranging from a fast-moving consumer goods company, where I had pan-European responsibilities, to roles in transport and gas and oil exploration."

"Because my own career has been so varied I hope that gives the members some confidence that the governance of our Institute is representative of all areas of our profession, across all sectors, industries, specialisms and roles."



Diana Montgomery is CEO at the Construction Products Association

After the board's September meeting, Montgomery, along with the rest of the board, Balcon and the IEMA management team, will be focused on polishing Vision 2020 so that it can be presented back to members as the finished product.

"Once we have the vision developed, absolutely everything will be focused on achieving it and putting the right steps in place to make it happen," she says. "The ultimate aim from this work is to support all of our members so that they can make a difference, as that seems to be what really drives them."

Montgomery replaces Adrian Belton who served as chair of the board until June 2013.

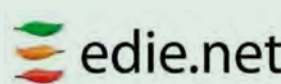
## 2013 graduate award

The deadline for nominations for the IEMA graduate award closes at 17:00 on Monday 30 September. The award, sponsored by Land Securities and supported by Edie and Sustainable Business, is held each year to celebrate the best emerging talent in the environment profession. With a prize package worth more than £1,000, the scheme attracts nominations from across many industries, sectors and roles.

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## Policy update



## Balancing competence

The government's review of the balance of competence between the UK and EU raises questions on where power should lie for developing environment and climate change policy and legislation. The environment, and the natural resources and ecosystems services it provides, underpins economic activity. While there has long been recognition of the impact of economic activity on the environment, there is growing evidence to show the environment will constrain economic activity in future.

To ensure the effective functioning of the European single market, it is essential that the costs of environmental damage and pollution are internalised in economic decision making, providing a level playing field through the application of the "polluter-pays" principle. Given the strong links between the environment and the economy, mechanisms to address market failure are, in the first instance, best addressed at the European level.

For many, the debate is less about the balance between EU and UK decision making and more about consistency of implementation. As highlighted in IEMA's official response to the government consultation ([lexisurl.com/iema16274](http://lexisurl.com/iema16274)), there is not just inconsistency between member states but also the between UK's devolved administrations – which are taking different approaches in implementing the water framework directive, for example.

In many areas of environment policy, significant improvements can be achieved through the application of appropriate skills and competence. However, this rarely forms the basis of implementation plans at the national or European level. A more structured approach to embedding skills provision in the delivery of EU environment policy is urgently required.

**Martin Baxter** is executive director of policy at IEMA.

# IEMA announces its 2013 annual general meeting

Notice is hereby given that the 13th annual general meeting of the Institute of Environmental Management and Assessment will be held at 17:15 on Thursday 19 September 2013 at 76 Portland Place, London W1B 1NT.

## Ordinary business:

1. To confirm Tim Balcon as an executive director of the Institute.
2. To confirm the following individuals as non-executive directors: Ron Finlay, Bruce Sheppy and Dave Stanley.
3. To reconfirm the following individuals as non-executive directors: Diana Montgomery and Ian Hill.
4. To receive and accept the directors' report and accounts of the Institute for the financial year ending 31 December 2012.
5. To re-appoint Duncan & Toplis as auditors of the Institute until the conclusion of the next general meeting at which accounts are laid.
6. To authorise the board to fix the remuneration of the auditors.

## Special business:

To consider, and if thought fit, to pass a resolution that:

1. **Article 21.4** of the articles of association of the Institute shall be amended to: "One person appointed from amongst the regional chairs of the Institute's regional steering groups in accordance with Article 22.1 below." **Article 22.1** of the articles of association of the Institute shall be amended to: "The chairs of the regional steering groups shall appoint one person from amongst their number as a member of council and shall notify the appointment to the secretary as soon as practicable. That appointee shall, together with the sector and corporate members of council elected in accordance with article 21.1 co-opt the co-opted members of the council." **Article 22.4** of the articles of association of the Institute shall be amended to: "Without prejudice to the foregoing article 22.3 above, the regional chairs shall have the power

at any time, and from time to time, to change their appointee to the council. In such a case, there may be a handover period, with both the incoming and outgoing member of the council participating in council meetings, but any vote shall be exercised by the incoming member."

**Article 26.9** of the articles of association of the Institute shall be added: "Each regional steering group shall appoint annually a chair from amongst the members of the regional steering group."

2. To consider, and if thought fit, to pass a resolution to allow the Institute to share member names and email addresses with other Institute members only for the purpose of engaging in Institute related activities, except where an Institute member expressly requests that their name and email address shall not be shared for this purpose.

**Martin Baxter**, company secretary  
IEMA Ltd, Saracen House,  
Crusader Road Lincoln LN6 7AS

Any member will be entitled to speak on any matters arising out of the directors' report and accounts, but no other business other than that given in the notice will be transacted at the meeting.

Every member entitled to attend and vote at the meeting is entitled to appoint a proxy or proxies to attend and, on a poll, vote on his or her behalf. A proxy need not be a member of the Institute. Completion and return of a form of proxy will not prevent a member from attending and voting at the meeting in person should he or she wish to do so. All proxies so appointed should be notified in writing, by no later than noon on Wednesday 18 September, to the following name and address:

**Lynn Godson**, governance secretary  
IEMA, Saracen House, Crusader Road  
Lincoln LN6 7AS

Further details, including explanatory notes and the current articles of associate, can be found at: [iema.net/2013-agm](http://iema.net/2013-agm).

# Consultation ends on Vision 2020

The initial consultation period for Vision 2020 has ended and more than 2,000 members have contributed to the process via workshops across the UK and Ireland, webinars and an online survey. The feedback has provided IEMA's chief executive Tim Balcon and the Institute's board with a range of opinions and wealth of ideas to aid the final development stage.

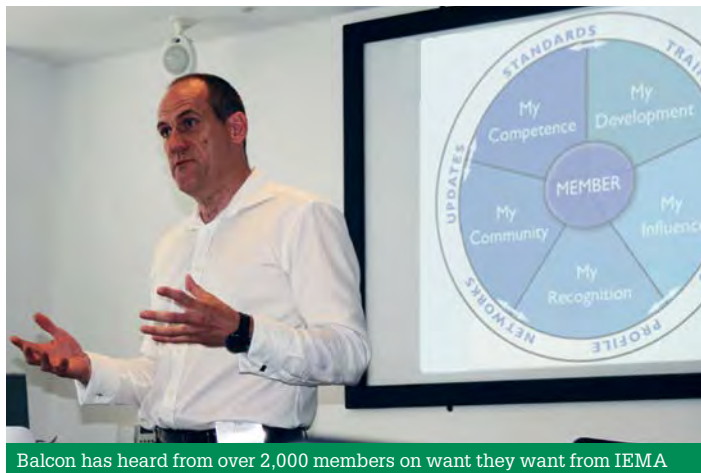
"I would personally like to thank every single member who volunteered their time to help us reshape IEMA," said Balcon. "Our entire purpose is to ensure that people with environmental skills are valued and recognised and we could not have completed any of this work without our members. I am genuinely delighted that so many were willing to offer their feedback so constructively. Together I know we'll make the Institute something pretty special."

Balcon will take the views of the members to the board and will use the responses from members to further refine the purpose and proposition – which covers members' development, influence,

recognition, community and competence – and the strategic objectives of the Institute until the end of the decade. Once each of these elements is fully aligned with the ambition of IEMA, Vision 2020 will be released back to the membership. At the same time,

the chief executive and board will begin developing the Institute's strategic plan. Full details of the plan will be published in future editions of *the environmentalist*.

Balcon has been writing a blog about the Vision 2020 process, detailing what he has learned about the members, the Institute and the environment profession



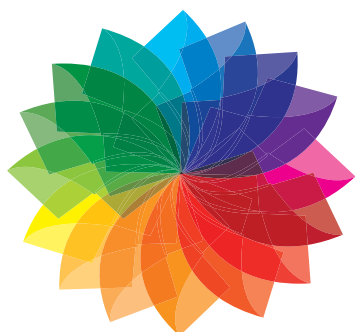
Balcon has heard from over 2,000 members on what they want from IEMA

since he took up his role as CEO in July. Visit [iema.net/vision2020](http://iema.net/vision2020) to read his latest post and previous entries, plus all other details about Vision 2020.

If you wish to submit any comments for consideration before the final development stage, contact IEMA at: [vision2020@iema.net](mailto:vision2020@iema.net).

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## More successful IEMA members

IEMA would like to congratulate the following individuals on successfully upgrading their membership.

### Associate via the online entry exam

**Maha Al Yafei**, Environment Agency (Abu Dhabi)  
**Wafa Al Yamani**, Environment Agency (Abu Dhabi)  
**Elizabeth Ammundsen**, Siemens Magnet Technology  
**Alex Anderson**, Farrans  
**Brian Bailey**, University of Portsmouth  
**Andrea Bassi**, Ingenieurteam Bergmeister GMBH  
**Mark Bingham**, Kepak Group  
**Victoria Brown**  
**David Burroughs**, DSTL

**Robert Caruana**  
**Mark Cook**, PT Rails and Civils  
**Scott Crozier**, Helena Partnerships  
**Gary Cruickshank**, Total E and P UK  
**Natalie Deane**, Babcock International  
**Stuart Divall**, Ramboll  
**Laura Foster**  
**Elizabeth Greenaway**, Morgan Sindall  
**Richard Hammond**, Atkins  
**Mark Hulme**, Harsco  
**Georgina King**, Babcock International  
**Michael Brosa**, Worley Parsons  
**Miia Laurikainen**, GP Strategies  
**Steve Leatherbarrow**, RAAS  
**Marie Lepesqueux**  
**Natalia Lozano**  
**Stacey Medar**

**Aidan Morris**, Grontmij  
**Ian Morris**, RAAS  
**Kevin McGarvey**, Farrans  
**Jonathan Peters**, Marine Management Organisation  
**Amy Pickard**, Verco Advisory Services  
**Martin Rayer**, Novartis Vaccines  
**David Reaich**, Total E and P UK  
**Daniel Reeves**, London School of Economics and Political Science  
**Adam Robinson**, BRE  
**Abeer Sajwani**, RTI  
**Rachel Seymour**, United Kingdom Atomic Energy Authority  
**Ross Stewart**, URS Infrastructure & Environment  
**Rhian Thomas**, Defra  
**Thalia Vounaki**, Bouygues Energies & Services FM

**John Walker**, Ricardo  
**Kathryn Watson**, Marine Management Organisation  
**Douglas Watterson**, Royal Haskoning DHV  
**Mathew Wilkinson**, Diligenta  
**Alasdair Wilson**, W H Malcolm

### Full membership

**Charmaine Morrell**, Morgan Sindall  
**Shing Fai Yip**

### Full and Chartered environmentalist

**James Clayton**, ERM  
**Kevin Kelly**, Bechtel  
**James Quinn**, Balfour Beatty

For more information on how to upgrade your membership visit [iema.net/membership](http://iema.net/membership) or call +44 (0)1522 540 069

## IEMA events

Date	Region/Time	Topic
10 Oct	Midlands	IEMA at the Resource & Waste Management (RWM) conference: reducing business and environmental costs through resource management

### Membership workshops

30 Sep	Yorkshire & Humber	Full and CEnv membership
2 Oct	East of England	Full and CEnv membership
14 Oct	South East	Full membership (Southampton)
25 Nov	South East	Full membership (London)



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# Frontline EIA

**Joe Attwood** discusses why professionalism is so important when conducting environmental impact assessments in conflict zones for the UN



**S**ome might argue that carrying out an environmental impact assessment (EIA) under the threat of being shot at or blown up is unnecessary. They might question if harm to the environment is important enough to justify entering a conflict zone, but for me the answer is always yes.

The environment suffers at the hands of conflict and harm often transcends national boundaries. Reckless pollution, such as Iraq's burning of Kuwaiti oil wells, can have regional implications, while the use of weapons that leave a legacy of water or soil pollution – for example, the use of depleted uranium during the war in the former Yugoslavia – require neutralisation once the conflict has ended.

Such environmental damage does, however, bring about a commonality between warring factions and this is often exploited by the UN. I have been working with the post-conflict branch of the United Nations Environment Programme (UNEP) for the past 10 years. The branch is tasked with assessing and responding to the environmental implications of a conflict and seeking to create a dialogue between the warring parties. Once the hostilities cease, we work to rebuild the country's infrastructure, with a focus on environmental protection.

My work comes at the assessment stage, often before the hostilities have fully ceased. I gather the data used to push the process forward, identify impacts that can result in acute risk and advise on mitigation. I recently returned from Mali, where my mission was to evaluate the environmental impact of deploying 12,000 peacekeeping troops. An incursion into northern Mali by so-called jihadists last year created tensions within the country that was liable to implode into civil war. Malian authorities requested support from the UN security council and the peacekeepers now form a "blue line" between two warring factions.

The environment is a key issue in Mali, more so perhaps than in other areas. Being adjacent to the Sahara, water is scarce. Existing communities barely survive and free food is distributed by the government to prevent starvation. I was called in to advise on how this fragile environment could support an influx of soldiers.

Credibility is the name of the game. I am termed an "expert" and expected not only to use the best possible techniques and practices, but to be able to apply them in whatever context I find myself. This can be a fleeting visit to an insecure zone or a conversation via a translator with a village elder. Whatever the situation, the process I use to assess environmental impact and risk remains the same. The reports I produce adopt the same terminology as those if I were performing an EIA

of a new development in the UK. Sometimes, when I am working in places like Mali, I wonder if colleagues in the UK would be surprised to see that the same level of professionalism is applied in a conflict zone.

My work also plays a role in the broader political picture. Over the past 20 to 30 years, environmental awareness has become a key issue on the global political stage. Expectations now run high that countries exhibit their environmental credentials by committing to multilateral treaties, such as the Kyoto protocol. These treaties represent the need to prevent, as well as understand, damage to the environment. What I do, and the recommendations I make, play into this agenda.

One of my first missions was to the Gaza Strip immediately following Israel's withdrawal in 2005. The region's infrastructure, including farms, industrial complexes and entire villages, had been destroyed to prevent it being put into use by the Palestinians. Our job was to assess the level of impact. The work was fraught with difficulty; our every move was tracked by the Israeli Defence Force or one of the many armed factions that controlled the territory. Gunfire was a nightly occurrence and by day drones buzzed overhead. But for us, there were other pressures. The work we performed had to withstand international scrutiny, and I drew on my training and experience to ensure the EIA techniques used would be entirely credible.

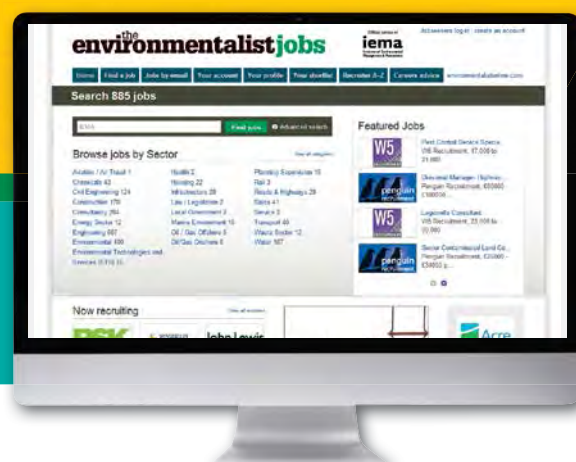
Despite the tensions, the mission was a success and our findings enabled the release of a substantial sum of money to Palestine. Without our work and its validation by the international community, the funding would have been withheld and that would have been a severe blow to the Palestinians. Furthermore, UNEP used our findings to bring together Israeli and Palestinian diplomats to commence dialogue using the common theme of environmental protection.

My work with the UN is high adrenalin stuff; guns and tanks definitely make for interesting fieldwork. However, the main focus remains assessing environmental impacts and developing recommendations that reflect the needs of locals and the expectations of the international community. A structured approach to EIA is the only way to develop a picture against which those recommendations can be developed. It is important that, as environment practitioners, we continually review our assessment techniques to ensure that we remain credible, whether we are dodging bullets or lobbying governments.

**Joe Attwood**, MIEMA CEnv, is a partner at Future Proof Consulting Solutions.

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